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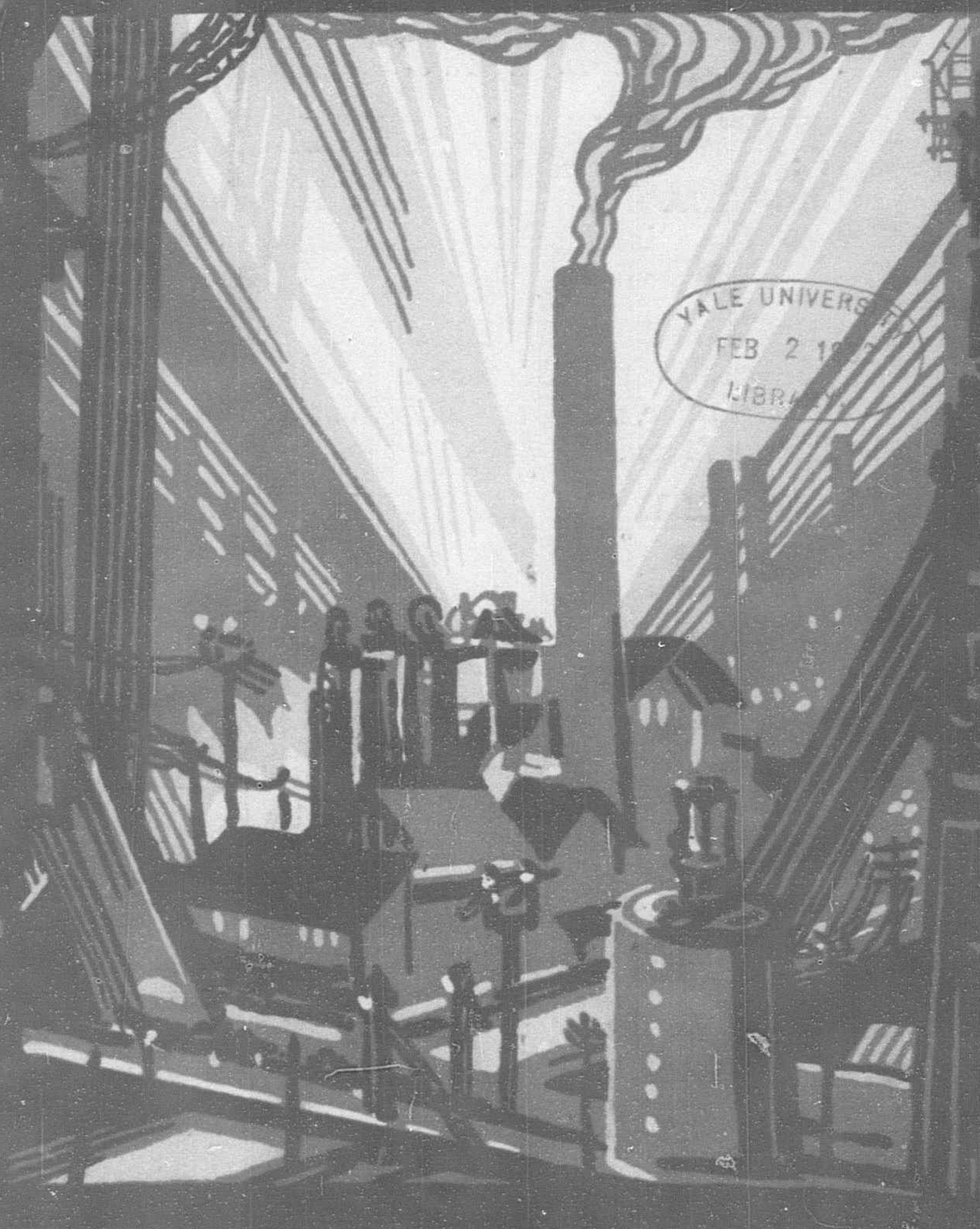

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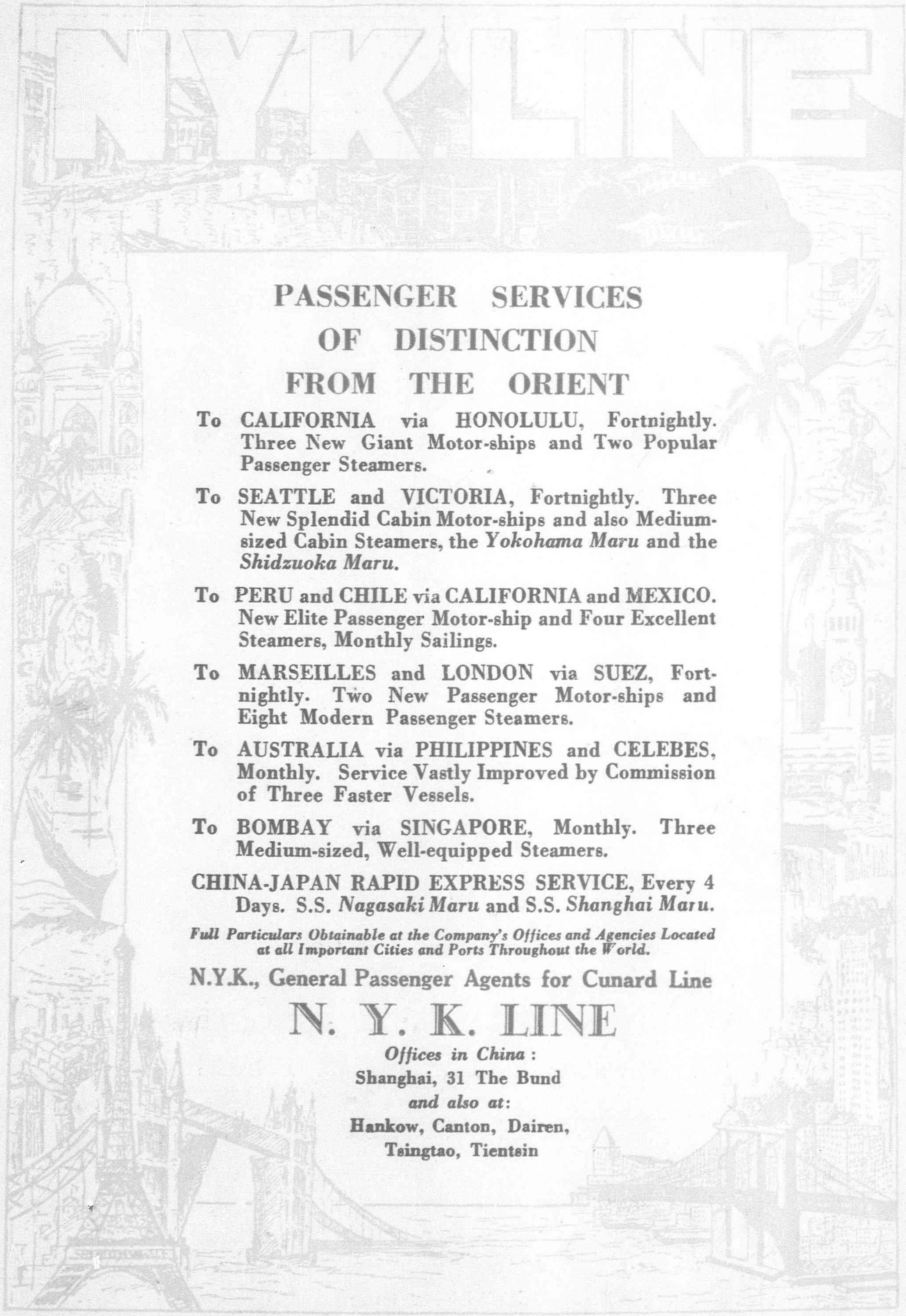
MATSUOKA'S PLEA FOR PEACE

PREJUDICE AGAINST JAPAN

ILL-INFORMED AMERICA

Vol. XXVIII DECEMBER, 1932 No. 12



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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

VOL. XXVIII SHANGHAI, DECEMBER, 1932 No. 12

Matsuoka's Plea for Peace

UNDOUBTEDLY the outstanding event at the recent session of the Assembly of the League of Nations was the address delivered, on December 6, by the Chief Japanese Delegate, Yosuke Matsuoka. This address, not only was the clearest exposition that has thus far appeared of the Japanese position in the existing controversy, not only did it make amends for the omissions and the reticences of earlier Japanese spokesmen, but in its restraint, and in its comprehensiveness, it measures into a great utterance by a great statesman. The speaker dealt simply and openly with all the complex elements of the controversy, both those favorable and unfavorable to Japan. He was impersonal, dispassionate and conciliatory and his words plainly carry upon them the stamp of honesty and sincerity. The address is given in full in the following:

The Japanese point of view has already been stated in our observations, in my addresses before the Council, and in communications to it. But the issue is of such a serious character that we want to spare no effort to bring the members of the Assembly to realization of facts.

There seems to be an impression that Japan opposes, and China supports, the report of the Commission of Enquiry, but such generalization is not warranted. There is much in the report that the Chinese can accept with no pleasure. The document has brought a strong light to bear upon the conditions prevailing in China, which the representatives of her Government throughout the world had long sought to cover, to excuse, and condone. There are many parts and passages in the report which we regard as entirely correct and accurate.

Our principal disagreement with the report, in the sections dealing with the disordered condition of China, is where it occasionally expresses optimism for the rehabilitation of the country. We, too, have hope, but it is not for the immediate future; for a country in China's condition of disorganization, as Chinese history shows, can not recover quickly. For a country, vaster than Europe in territory and larger than Europe in population, to change abruptly from an ancient to a modern state is too much to expect in a brief period of time.

Japan is a loyal supporter of the League of Nations. In conformity with the principles of peace, on which the League is founded, we have striven to avoid war for many years under provocations that would certainly have brought it about but for our patience and conciliation. Our adherence to the Covenant of the League of Nations has been the guiding principle in our foreign policy for the past 13 years of the League's existence, and we have been proud to participate in the advancement of its noble object. No open-minded person who has observed the long and earnest patience in our relations with China could contend to the contrary.

Our Government was still persisting earnestly in its efforts to induce the Chinese Government at Nanking and that of Marshal Chang Hsueh-liang at Mukden, to see the light of reason when the incident of September 18, 1931, took place. We wanted no such situation as has developed. We sought in Manchuria only observance of our treaty rights and the safety of the lives of our people and their property. We wanted from China the right to trade, according to the existing treaties, free from unwarranted interference and molestation. But our policy of patience and our efforts at persuasion were misinterpreted by the Chinese people. Our attitude was regarded as weakness, and provocation became persistently more unbearable.

Mr. Yosuke Matsuoka

Tried to Negotiate

It must well be noted, in this connection, that prior to the incident, we had been making every effort to negotiate and bring about a better understanding and feelings in Manchuria and had not abandoned the hope until the last moment that our effort would be crowned with success. Our Government hoped subsequently to check developments and limit their scope in the affected territory, but too many elements were active in opposition. The Chinese military forces were mobilized at Chinchow and forces, remnants of Marshal Chang Hsueh-liang's forces, assembled in other parts of the country. Later in October, last year, Japan proposed to enter into direct negotiation with China, with a view to arriving at a pacific settlement of the controversy. Our Government was insistent on this point.

But the Council of the League of Nations failed to countenance it and China, encouraged by the attitude taken by the League, turned a deaf ear to this proposal, thus stiffening and complicating the situation. What followed is well known. At the same time the boycott which had been going on in China before the incident was greatly

intensified, thereby provoking further, on the one hand, ill-feelings in Japan and adding, on the other, fuel to mob psychology.

The Chinese representative spoke before the Council the other day of the legalization of boycott. If that is admitted, it is sure to create a very serious situation. In point of fact, the statement he made in that sense has provoked a fresh outbreak of boycott in many parts of China (as related at length in the communication made by our delegation to the League of Nations).

The boycott as we see it in China is a great hindrance to the promotion of international peace and co-operation. It creates circumstances which will threaten a good understanding between nations, on which peace depends. It, therefore, deserved thorough consideration and deliberation on the part of the League, one of whose primary duties lies in the elimination of possible causes of friction between nations.

A government which had its beginning as result of aid obtained from Soviet Russia, in arms, men and money (seven or eight years ago) and which is still imbued with what are called "revolutionary principles," was not content to abjure our trading interests in China proper, but extended its campaign against us into Manchuria with the avowed purpose of driving us out of that territory—the territory which, we, through war with Russia, had returned to the Manchu dynasty 27 years ago. That our rights and interests were assailed and even, in some cases, persons of Japanese subjects were attacked, are facts established by record. That we acted in self-defence is clear and warranted.

When the British Government sent its troops and naval vessels to Shanghai in 1927, it had a foreknowledge of a menace threatening that city. The British Government, therefore, was in a position to inform the League of Nations of its intentions. Our Government was in no such position with regard to Manchuria, because it did not expect the incident of September 18 to take place. Our Government had no knowledge of trouble until after it had occurred. But on learning of it, they informed the League of Nations.

"World Opinion"

While the situation was developing in Manchuria, efforts were made in Europe and the United States to rally what is called "world opinion" against Japan. The craft of propaganda, in which our Chinese friends are particularly adept, was put into effective use in shaping world opinion against Japan, before the facts were fully known.

The success of this last activity in Western countries had unfortunate effects in the East. It encouraged the Chinese leaders to take an uncompromising attitude toward us. It encouraged them to believe that the Western countries would interfere and save them from the consequence of their anti-foreign policies as they were applied to Japan and her interests. It accentuated the situation from which we were unable to withdraw without dangers of further and more serious evils to follow.

In dealing with China, Japan is dealing with a state in a menacing condition. The actual menace to us not only existed prior to the incident of September 18, but was being intensified by the activities of the Kuomintang Party and officials of the Nanking Government. As far as there is a national government in China, that government is related closely to the Kuomintang.

The report of the Commission of Enquiry is emphatic on this point. It states on Page 16 that in 1927 the Central Government was established at Nanking. It was controlled by a party (the Kuomintang Party, namely). It was, in fact, merely one important organ of the party. Against such a party and a government and against their declared policy and active efforts to terminate our interests and treaties in Manchuria, we have acted in defence, we have acted also with a view to promoting and preserving peace. Because our action came as a result of the incident, it does not alter the general fact. It had to come sooner or later. The menace to Japan was actual. If her rights and interests in Manchuria were violated, the sufferer would be none but Japan.

Answers Question

The question is asked why the Japanese Government did not seek protection from the League of Nations. The answer is that in view of the present structure and scope of the League, effective protection could not be expected from that body promptly. In the situation that existed in Manchuria, Japan had to deal, first, with imminent danger; second, with a country whose authority did not extend to Manchuria; and, third, with a government which had adopted a policy of unilateral abrogation of the treaties and conventions. In so exceptional a situation, was it possible to expect protection from the League? As to the other reasons, I had the occasion to mention before the Council the other day.

If it is contended that the League of Nations could have afforded Japan adequate protection, why was it—may I be permitted to ask—that the League Council gave its approval, with no dissenting voice, when Great Britain, with France, the United States and Japan, sent her troops to Shanghai in 1927? Not only did the League refrain from protesting on that occasion, but the Government of China also refrained. At that time, Dr. Wellington Koo was the Prime Minister of the Government at Peking. The Government then welcomed the presence of the British and other troops in Shanghai as of possible service to them in staying the advance of the Nationalist forces then hostile to them. The same Peking Government also refrained, for the same reason, from calling the attention of the League to the despatch of Japanese troops to Tsinan in 1927 and 1928, for then the Japanese might have been of help in saving them from defeat.

The Chinese representative, in a statement made before the Council the other day, charged that the Japanese troops were sent to Tsinan with the object of interfering with the advance of what he called the ever-victorious Nationalist army and of preventing the unification of China. Dr. Koo must know very well that our real object in despatching the troops to the capital of Shantung was to protect the lives and property of our people.

He must also know that the old Marshal gave vent at that time to a display of anger that our troops should have refrained from assisting him, as they could have saved the old Marshal's position in North China and incidentally that of Dr. Koo. But they followed the traditional Japanese policy of refraining from interference in civil wars of China. Now, however, Dr. Koo comes to Geneva as the representative of the Government which defeated his chief of four years ago and reverses his position.

At the time when Great Britain sent her troops to Shanghai, Sir Austen Chamberlain, the then British Foreign Secretary, sent a letter dated February 8, 1927, to the League of Nations from which I beg leave to quote. On the subject of the conditions of China, the letter says:—

"Unfortunately since 1922, the date of the conclusion of the Nine-Power Treaty, China has become more disunited than ever—the Canton Nationalist Government has now increased its authority over a greater part of the country south of the Yangtze river and claims to be recognized as the only Government of all China."

This fact has modified the hypothesis upon which the Washington policy was based.

On the subject of the boycott, Sir Austen's letter to the League states:—"The extremists of the Canton Nationalist Party have singled out the British people for an implacable campaign of calumny and boycott. Indeed, enmity against Britain has been deliberately and persistently cultivated by this section and its advisers in order to promote the solidarity of the Nationalist Party and stimulate its aggressive spirit. The extremely friendly and considerate attitude of His Majesty's Government as shown at the Washington Conference and on many other occasions contemptuously are brushed aside."

Who Gave the Most?

Will any one who knows the terms of the treaties regarding China signed at the Washington Conference dispute the fact that the greatest concessions made by any Power to China at that time were those that Japan made? Greater than the concessions of all the other nations combined were those which Japan made to China.

With regard to the anti-British propaganda, Sir Austin's letter to the League reads:—"It is essential that official stimulation of anti-British propaganda must cease. The comparative peace of a greater part of Southern China during the last two or three months has proved that when organized agitation and intimidation are absent, the friendly relations between the Chinese and British

people remain as excellent as they have been in the past." The same thing can also be said of the relations between the Chinese and Japanese people.

In regard to a settlement by the League of the difficulties which existed between Great Britain and China five years ago, Sir Austin said in conclusion that "His Majesty's Government deeply regrets that there does not appear to be any way in which the assistance of the League in a settlement of the difficulties in China can be sought at present."

Japan likewise saw no way in which the League could help her in Manchuria. There is a marked difference between the case of Shanghai and that of Manchuria. Whereas Great Britain sent her troops to Shanghai, the Japanese troops were already on the spot by virtue of treaty rights for protection of the Japanese interests along the South Manchuria Railway.

It was the plan of the Nationalist Government (in which the present National Government had its beginning) to concentrate its propaganda and hostility upon one foreign government, its interests and its people in China at a time. In 1926 and 1927, hostility against Japan was deliberately abated under orders from the Government and concentrated upon the British. They were then to be got rid of first. The British concessions in China treaty ports were pointed out to masses of ignorant and hungry people and to undisciplined and rapacious soldiery as places of wealth which they were encouraged to recover.

The country was placarded with pictures depicting John Bull as an ogre who garnered his wealth through exploiting Chinese labor and robbing the Chinese people. It was as a result of such incitements that the British concessions at Hankow, and Kiukiang were surrendered to the Nationalists. But there British tolerance came to an end. When General Chiang Kai-shek arrived with his army in Shanghai, he found that the city was not to be a prize of his army. It was surrounded by an adequate force of British, French and other troops, who were prepared in redouts behind barbed wire entanglements to hold it against him. On surveying the lines, it was evident to the Chinese commander-in-chief what would happen to his troops if he attempted to assault.

Root of Trouble

At the root of the present trouble between Japan and China, we find a lack of cohesion between these two countries. In order to satisfy these aspirations progress is needed. Progress in China is, in our opinion, essential not only to the maintenance of law and order but also to the stabilization of her foreign relations.

It should, therefore, be the urgent duty of the League to aid China in this direction. The fundamental principle of the League is to promote international co-operation and achieve international peace and security as pointed out in the Preamble of the League Covenant, Japan, for her part, is ready to do all in her power to co-operate with the League in helping China to attain progress.

With regard to the independence of Manchukuo, the Japanese Government cannot be held responsible. Even the Report of the Commission of Enquiry nowhere impeaches the Japanese Government in this connection. It is one thing to state that some officials or officers interested themselves in the autonomy movement. The Commission perhaps meant to refer to the attempt to recover peace and order through a local government, although their phraseology is not clear. It is another to hold a Government responsible for abetting an independence movement.

Prior to September 18 and even after that, our Government had no plan or design to accomplish an independence of Manchuria, nor have they allowed themselves at any time to be connected with the independence movement.

First came a movement of the leaders of the people in the territory itself. This, contrary to the Lytton Commission's Report, was definite and emphatic and began within eight days after the incident of September 18. Before our troops in Manchuria had time to consider anything beyond their immediate military duties and before our Government had time to learn the full significance of the events that were taking place, the movement was launched by Chinese leaders in Manchuria. Learning of this movement our Government took immediate steps to avoid participation in this movement, reaffirming its traditional policy of non-intervention in the domestic affairs of China.

On September 26, both Baron Shidehara, Foreign Minister, and General Minami, War Minister, issued instructions respectively to the civil and military representatives of Japan in Manchuria forbidding participation in this movement. But their efforts could not stop the sympathy of the Japanese people with them. The people of Manchuria had suffered too long under the oppression of ruthless dictators; and seeing an opportunity to organize a civil government they lost no time in taking advantage of it.

We have given an outline of the progress of this movement in our observations on the Commission's Report and the Manchukuo Government furnished the Commission with a detailed history of the movement on the occasion of their visit to Manchuria. I shall not therefore take up more of your time by narrating the story. I only wish to refer you to these documents which I feel confident will give you a right picture of the movement.

With regard to the recognition of Manchukuo, there is this to be said. The new government had the sympathy of all Japanese people. We saw in it a solution of the problem which troubled us for forty years. We saw in it the termination of hostile incitement from China proper. We saw an advent of a civil government composed of reasonable men who understood the strategic and economic importance of the territory to Japan. We saw a promise of peace for the future. We wanted peace. We did not and we do not want Manchuria. We wanted only the preservation of our rights and interests there. Here at hand was the solution by a prompt recognition of Manchukuo; and our government in giving that recognition acted in response to the demands of the Japanese people and appeals of Manchukuo.

If all the conditions in the Far East were fully known and carefully weighed it would become evident that Japan so vitally interested in Manchuria could not possibly withhold recognition any longer. In point of fact, the extension of recognition to one State by another is entirely within the exercise of its sovereignty and can in no case be contested by another. There are many precedents in European and American History. I would add that the effect of the recognition of Manchukuo by Japan cannot fail to be wholesome throughout the entire Far East. It should be known that the whole nation of Japan regards Manchuria as the keystone of the solution of all Far Eastern questions.

The Major Problem

The Commission's Report (on page 125) says: "The all-important problem at the present time is the establishment of an administration acceptable to the population and capable of supplying the last need—namely, the maintenance of law and order." The Report (on page 132) states also: "It would be the function of the Council, in the paramount interest of world peace, whatever may be the eventuality, to decide how the suggestions made in our Report may be extended and applied to events which are still developing from day to day, always with the object of securing a durable understanding between China and Japan by utilizing all the sound forces, whether in ideals or persons, whether in thought or action, which are at present fomenting in Manchuria."

It is stated in Chapter IX of the Report (page 127) that: "A mere restoration of the *status quo ante* would be no solution. Since the present conflict arose out of the conditions prevailing before last September, to restore these conditions would merely be to invite a repetition of the trouble. It would be to treat the whole question theoretically and to leave out of account the realities of the situation." And in another place (on page 130) the Report says that: "A satisfactory régime for the future might be evolved out of the present one without any violent change."

In the light of these findings of the Commission of Enquiry I do not know what the Assembly thinks of the actions already taken and of those that are being taken in Manchukuo by Marshal Chang Hsueh-liang and by the Nanking Government. But it is my opinion that these actions run counter to these findings by the Commission.

We would therefore suggest that the sound forces of which the Report speaks be left to develope naturally. Interference with their development might bring about consequences contrary to what the League has been seeking to accomplish. We Japanese, knowing China, do not take seriously the warnings often made in

Geneva that China will be unified and militarized as a result of Japan's action in Manchuria.

We believe that a really united China is a peaceful China, not a militarized China. There are more armed soldiers in China even to-day than in any other country in the world. There are between two and three million men in arms. But hostility of any military chiefs to foreigners is not so great as their hostility to one another. This has always been the case since the days of the first British wars with the Chinese. Chinese generals do not always support one another against a foreign enemy. In short, Chinese armies are not created primarily for national defence of the country.

Since the proclamation of the Republic of China, the governments have been short lived. They have risen and fallen in quick succession. And now what do we see? A national government that had its beginning in the Russian movement to sovietize China; a government that controls only several provinces about the mouth of the Yangtze River and even these not completely; a government that rebelled from the Soviet movement but retained its revolutionary principles regarding unilateral abrogation of treaties with foreign countries. The League Commission's Report states at the top of page 23 that: "Communism is to-day eating into the very heart of China. In this connection we would say that Japan cannot afford to shut her eyes to the possibilities of the future."

Outlines Principles

Our action in recognizing the State of Manchukuo was the only and the surest way for us to take in the present circumstances. In the absence of any other means of stabilizing conditions in that territory,—where we have interests both strategic and economic which we cannot sacrifice,—we had no other recourse. Now the Assembly has to consider whether it will or will not make a suggestion for settlement, and, should it decide to make them, what those suggestions will be. Any suggestions should, we think, be governed by the following principles:

1. The terms must be such that they can be effectively put into operation and that they will accomplish and preserve peace in the Far East.
2. A solution must be found for the disordered condition of China.
3. In case any plan for settlement is found by the League, this organization must take upon itself responsibilities for its execution.

Considering the actual condition in China, the execution is one that is likely to be costly and the League should have both the will and means to make necessary sacrifices. Is any member of the League ready to participate with others in such an undertaking? Japan is fully conscious of the fact that the League is the bulwark of peace. The spirit of the League coincides with the fundamental policy of Japan which is to consolidate peace in the Far East and to contribute to the maintenance of peace throughout the world. This she believes to be her share in contributing towards the progress of the world and promotion of human welfare.

It is true that voices have been raised in some quarters criticising the efficiency of the League. But the fact that the Manchurian affair has not led to a foreign war between China and Japan or to trouble between other interested Powers is assuredly due to the actions of the League. It may be safely said that the League has fulfilled the high object of its existence. To hope for anything over and beyond what it has done in this direction would be to expect too much under the present conditions in China.

Again as to the apprehension entertained in some quarters that the present case might lead to weaken or even undermine the principles of the League Covenant, we firmly believe that such apprehension is entirely groundless. The exceptional nature of the present case makes it plain that you can hardly apply to it those principles by generalization. Nor do the Japanese actions militate against the Pact of Paris or against any other treaties.

The Report of the Commission brings out this exceptional nature clearly when it says: "This summary of the long list of Japan's rights in Manchuria shows clearly the exceptional character of the political, economic and legal relations created between that country and China in Manchuria. There is probably nowhere in the world an exact parallel to this situation, no example of a country enjoying in the territory of a neighboring State such extensive economic and administrative privileges."

All the world is in a constant state of change. All objects animate and inanimate are constantly moving, let us hope, towards a better state.

Might not the League well take cognizance of the ever changing conditions in the East and judiciously adjust its views and actions to them? As we Japanese read the League Covenant, it is not a hard and implacable instrument.

In conclusion I would say that as for Japan and China in particular, we look for a time to come when the two nations of the distant East will realize the common origin of their culture and traditions and the common interests of their existence and will co-operate with a sense of mutual understanding and respect in the policy of upholding peace in the Far East, thereby serving the cause of world peace in and with the League of Nations.

Prejudice Against Japan

By Dr. E. J. DILLON in the "Fortnightly Review"

The Lytton Report, for which a section of the political world waited with trepidation, has caused little or no disappointment to those who are familiar wth Far Eastern affairs. It is more or less what they expected: the outcome of a conscientious effort on the part of courageous politicians to solve the insoluble and wrestle successfully with a law of nature. To unravel the present Manchurian tangle would have been an heroic exploit under the urgency of the circumstances as to time, place and other adverse conditions; but to extract in six months from the meagre results of such a superficial inquiry a basis broad enough for the settlement of the whole congeries of Far Eastern problems would be miraculous.

Lord Lytton and his fellow Commissioners are to be congratulated on the way in which they discharged their delicate task. Their position was somewhat awkward as spokesmen of powerful and thriving nations which, without rhyme or reason, had wrenched off from China whole provinces and fine seaports and are now engaged in hindering a struggling people from doing likewise on a smaller scale and under pressure of extreme necessity.

The Report, in spite of State Secretary Stimson's two frank anticipatory speeches, has encountered angry criticism in Tokyo and barely frigid assent from European publicists. Its authors are accused of partiality to the Chinese. To this the answer is that the Commissioners would not be human were they absolutely impartial. All Western peoples have lived in an atmosphere of rank prejudice, created deliberately against Japanese ever since that remarkable people became a factor in international politics. And of that prejudice few public men have as yet been able to divest themselves wholly, despite the recognized fact that Japan inherited and maintains a racial tradition of exalted courage, a fine sense of honor and a selfless public spirit. The behavior of her people in peace and war, as allies, friends and parties to "gentlemen's agreements," as competitors and as enemies, has deserved and received high praise. Yet in face of these qualifications the Japanese were branded as an inferior race, to be kept at arm's length by all white peoples. And ever since they have been treated with studied contumely by the Western governments, and denied equal rights, their treaties and compacts with China have

been annulled, their spoils of war snatched from them and the frontiers of foreign states closed against them.*

All this was connived at as the use and wont of politics. But on the part of peacemakers it was a fatal error which still cries out for reparation. Japan resents the systematic frustration of her every endeavor to find an outlet for her people, and references to the integrity of China, coming from China's despoilers, awaken no echo in her soul.

The supercilious spirit of the Western Powers having thus spread throughout the world, could one expect the Commissioners to be wholly immune from it?

The Report rightly lays stress upon the animosity between the Japanese and the Chinese, which gradually became so bitter that it could end only in an armed conflict. But it has nothing to say about the part discreetly played by outsiders in fanning that hatred into flame whenever it seemed to be dying down, as was the case, for instance, under the conciliatory influence of Sun Yat-sen. Chinese youths educated in American schools and universities are said to be the purveyors of this patriotic incitement. I may say that those whom I met in China, the United States and elsewhere displayed a strong bias against the Japanese. It is certain that for several years past the influence of the United States on China's political thought and action has been growing, without being obtrusive, and it is possible that this influence, now amounting to a circumspect guardianship, may have been a vital element in embittering the relations between Japan and her great neighbor.

It looks as though the comprehensive issues involved in the Far Eastern problem were being narrowed down to a trial of strength between the United States and Japan, the former taking its stand upon the sanctity and the abiding force of treaties, and the latter holding that her first duty is to make decent provision for her sixty-five million citizens, even though in doing this she overstep the letter of a compact. The Report provides a bridge to span the chasm between those standpoints, and it now remains to be seen whether the parties will cross the planks and meet.

Each side suspects the other of evil machinations, and, as usual in such cases, they both exaggerate. It cannot be gainsaid that Japan has occupied territory which is now held to belong to China; but it is also true that Manchuria has for years been bought and sold, sliced and carved, taken by conquest and re-taken by dint of brutal intimidation, and has been unanimously regarded as an atrophied limb of the Chinese realm by all the Powers whose representatives drew up the Lytton report.

I testify to facts that came within my ken. I have studied the various aspects of the Far Eastern problem ever since it first became actual, and talked them over Russian, American, Chinese and Japanese statesmen. At the Portsmouth Conference, where the plight of Manchuria and of other Chinese provinces gave rise to animated debates, all the documents, published and unpublished, passed through my hands in my capacity as Witte's adviser,† and years later M. Izvolsky discussed with me in detail the persistent attempts of the United States to cut off Manchuria from China, draw a neutrality cordon around it, and bring it within the sphere of the nations which are now responsible for the Lytton Report. But long before the Portsmouth Conference I had watched the tangle rise and grow. At the coronation of Russia's last Tsar, when Li Hung-chang was listening sceptically to Witte's project to take the projected Trans-Siberian railway through Manchuria and to raise a Chinese loan in the Tsardom, I had occasion to admire the plausible way in which the Russian Minister put his case so as to attain his end and yet save the great Chinese statesman's face. A money gift was discreetly promised to the Chinese plenipotentiary, and the bargain was struck on the spot.

And in all these dealings China's rights and the rights and interests of Japan were held in derision.

It was thus borne in upon me with what scant ceremony the birthright of the yellow races was being chaffered away by all those puritanical world-reformers. The Russian system was to create vested interests in the coveted country by building railways there and issuing loans, and then to protect, if necessary by force, the rights and interests thus created. I had the advantage of being in close contact with the whole fraternity of international peacemakers, whose deliberate purpose, which they avowed in private and implied in public, was to make Manchuria a country fit for only white heroes to live in. Commencing with the usual unctuous phrases of polished diplomacy, they ended by acknowledging their real object. I possess in my diaries a series of characteristic conversations taken down day by day which throw a strong searchlight upon this section of history.‡ When the representative of an American Syndicate, the late Willard Straight, arrived in the Russian capital it was I who made it possible for him to see Count Witte, Prince Oblensky, M. Izvolsky and others, and when needful I acted as his interpreter. I also arranged for meetings between Witte and the American Ambassadors Meyer and Rockhill.

Now, all these statesmen, including Tsar Nicholas II, were animated by an ardent desire to see Manchuria colonized with whites *and only with whites*, and to have further sections of China carved up for their respective countries, and Japan eliminated at all costs as a political factor in the Far East. That, with modifications, was the program of one and all. It can hardly come as a surprise, therefore, to those who bear these material data in mind that Japan should lack confidence in the sincerity of the governments whose delegates wrote the Report, and should feel unwilling to submit any question involving her rights or interests to their arbitrament, and that carries suspicion at times beyond the Hercules' Pillors of likelihood. The first token of sincerity on the part of the Powers of the West would necessarily take the shape of amends and restoration of the illgotten possessions. And of this there is no sign.

The slices of China earmarked by the Tsar were extensive, and at one time included the annexation of all Manchuria as well as of Korea and Tibet. His War Minister, Kuropatkin, submitted a secret report which enables us to realize what Russia thought of China's integrity. This was the conclusion of the document:

Having taken possession of all free lands, we shall be able to colonize northern Manchuria with Russians. We shall establish ourselves in strong positions important from a military point of view. . . Inasmuch as other Powers have no vested interests of an economic nature in northern Manchuria, the annexation of the region to Russia may be effected without causing a breach with any of the nations concerned. . . . If, besides North Manchuria, we also annex the South, we can count on the following advantages . . . and here follows a list of the pros and cons. And in Russia's official reply to Japan on the eve of the war between the two empires Japan was summoned to recognize that Manchuria lay outside the sphere of her interests! Great Britain's sphere of interests was situated in the rich valley of the Yangtse, of which Germany suddenly coveted and demanded an adequate share. And even Italy put in a tardy claim for a slice.

That was what the Powers thought of China's integrity when their own interests were supposed to be at stake. But when Nippon sought to acquire a rood of territory or a seaport the tidings caused intense ruffling and fluttering in the dovecots of diplomacy, and China's integrity and the sanctity of treaties were solemnly invoked. The impression which this difference of treatment made on the inferior "race" can well be imagined. It wrecked in advance all pacific plans which might conciliate the interests at once of the Chinese, the Japanese and the Western Powers, and it is likely to wreck the praiseworthy exertions now going forward to establish universal peace. Anyhow, the only way left to Nippon of providing for the need of her people was that which she has struck out in Manchuria, and which the international Commissioners felt bound in conscience to deprecate. That she did not sacrifice her people to the integrity of China is the burden of the complaints against her conduct, and it is impossible to acquit her of the charge.

I made bold to inquire of each and every statesman, Russian and foreign, who met to discuss Far Eastern problems in Portsmouth, St. Petersburg and Washington, whether they regarded China as a sovereign state, or Manchuria as an integral part of China, and the answer, couched in a variety of phrases, was in the

*I was myself to some extent instrumental in bringing about a change in the attitude of Mexico towards Japan. On several occasions I brought up the subject in my conversations with the late President Obregon, unfolding to him the story of Japan's entry into international society and dwelling upon the injustice put upon her people and some months later he assured me that, come what might, he would have the Mexican frontiers thrown open to them. The rebellion headed by de la Huerta hindered him from carrying out his intention before he left office, but his friend and successor, General Calles, redeemed his promise soon afterwards in the year 1925.

†See Viscount Hayashi's "Secret Memoirs" (London, Eveleigh Nash), see also the work on the Portsmouth Conference written by Korostovetz (in Russian), who was the official Chief of the Russian Delegation under Witte.

‡These diaries may see the light in the course of 1933.

negative. And one is tempted to ask whether, if the peacemaking Cabinets were in Japan's place to-day, they would be more considerate for China's integrity than Japan has been. But this, of course, is no justification.

The full extent to which Tsarist Russia illtreated China, Japan and Manchuria was brought home to me one day towards the close of last century when a number of secret telegrams came into my possession together with the Secret Treaty between Russia and China *directed against Japan* which I published in the *Daily Telegraph* of February 15, 1910. Here are a few samples of the peacemakers' machinations :—

A telegram sent on 9/21 March, 1898 from* Pokotiloff to Witte :

To-day, in concert with authorized agent, I had confidential chat with Li Hung-chang and Chang In-huang, promising if affair of Port Arthur and Talienwan is settled by date fixed by us and without extreme measures on our part, five hundred thousand lans† each. . . . ‡Bogdykhan has received piles of petitions asking that our demands be rejected. . . . On the same day Pavloff§ telegraphed to Witte :

Most secret, Pokotiloff and I promised Li Hung-chang and Chang In-huang five hundred thousand lans each, providing that by March 15th convention has been signed without our being constrained to adopt extreme measures.

A message dated 9/21 March from Witte to Pokotiloff runs as follows :

It is desirable that by March 15th your authorized agent be in Port Arthur with necessary sums so that on the one hand he may on the spot predispose in our favour the authorities and agents concerned and on the other hand may contribute to our (naval) descent. Act in concert with Pavloff and wire results.

The following is a supplementary message despatched by Pavloff to Witte on the 12/24 March :

Promised reward produced due effect. Li Hung-chang and Chang In-huang have interested in it the other Ministers and even the princes. Desirable that as soon as possible after signatures being affixed promised sums be paid. I respectfully request that suitable instructions be given to Pokotiloff.

Witte then telegraphs to Pokotiloff on 13/25 March, 1898, as follows :

As soon as affair is satisfactorily settled pay congruously with your telegram 9/21 March one million lans.

On the 17/29 March Pokotiloff telegraphs to the Minister of Finance (Witte) :

Most secret. Yesterday I paid to Li Hung-chang promised five hundred thousand lans.

We next learn that Chang In-huang fears to take his share of the money because he is so closely watched. Soon afterwards his house is surrounded by soldiers, and an inventory is made of his property. The last we learn about him from the secret telegrams is that he is banished for his delinquencies, and that he asks that the money be sent to his place of exile. And Witte grants his request. Some of the other Chinese were beheaded.

In all these dealings the integrity of China was but a bugbear used to frighten the Japanese. However much the peace-loving Powers might carve up the celestial empire to suit their needs or their whims, the Peking Government, even under the energetic Empress Tse-si, dared not budge. But the moment Japan strove to get a share, whether by war or by treaty, China was transformed into a sovereign and inviolable realm, the maintenance of whose interests became the keystone of the world's state-system, and lay sermons were preached on the sanctity of treaties. Students of politics have not yet forgotten how all those Powers co-operated to squash by force the treaty of Shimonoseki, by which, after a hard-fought campaign, Japan had received part of Manchuria and other territories. The Western governments, in a fit of righteous indignation, refused to tolerate the heinous misdeed. In the name of China's integrity and of political morality they constrained Japan to disgorge her prey, and then they fell to and seized for themselves the territory which they had rescued from Nippon's clutches in the name of the integrity of China. And their sincerity is questioned now in consequence. The Japanese hold that the Powers to-day are intent on the safeguarding of the territories which most of them wrested from China and on the acquisition of the economic over-lordship of Manchuria by the United States. Stripped of the verbosity of diplomacy, the present scheme may be described as the sequestration of Manchuria under legal forms for the behoof of the most solvent and most wealthy nation.

The elimination of Japan as a political factor from the Pacific, which has been and still appears to be the chief purpose of the economic powers, is of course a conceivable policy in itself, but to allot to the Japanese an important rôle in realizing it is, to say the least, pushing optimism to unwonted extremes. The difference discernible between the two policies is one of method. In the past the means employed were of a military order ; to-day they consist in economic and financial pressure, to which Japan is particularly sensitive. The beneficiaries have also changed, but, whatever else may be altered, Nippon's fate, as the Powers conceive it, is still the same.

Lord Lytton and his colleagues very properly look askance at Japan's military action as being open to grave objections on juridical and moral grounds. And with this attitude the whole world will sympathize. But one cannot help seeing that in the present tangle, to which the policy of the Western Powers has materially contributed, no possible course was, or, is, free from grave objection. With regard to the sanctity of treaties, the safest line to take in the present conjuncture is to give up insisting on the maintenance of the forms of treaties where the reality is impossible. But the remedy favored by the Report is the negotiation of a series of new treaties. . . .

The recommendations of the Commissioners are certain to receive the careful consideration they merit. Some of them, however, may prove difficult of fulfilment. One of these is the advice to Japan to come to an agreement with the Central Government of China. Hitherto the Japanese have refused to treat with the Chinese Central Government because it does not exist, nor has it existed for the last ten years. Local governments there are in abundance—by all accounts there are eleven—and no two are pulling in the same direction. It has been computed that there are also sixteen different armies in the country under Christian generals, youthful marshals, self-made commanders and ambitious coolies turned warlords, but there is no unity of command, no common purpose, no organization. General Ma raised great hopes for a time, and then his star paled and set, and the recent rambling explanation which he published of his strange evolution seems to have imparted finality to his fall. General Chiang Kai-shek, who had picked up ideas about statecraft and got together a government which bade fair to put an end to chaos, was ousted from office by envious rivals before the end of the third year. When, instead of persons, whole cities tried their hand at saving the country, Nanking distinguished itself among them all and raised great expectations for a time, but these were dashed by the criminal revolt of Canton.

Letters I have lately received from Mukden and Harbin describe a lamentable state of anarchy there and throughout the land. Troops levy tribute on city, town and country, and when they have exhausted all other resources, become brigands. Communist forces loosely organized are said to be two hundred thousand strong. Soviets, established in two provinces and steadily spreading to others, are among the symptoms of China's malady. The present plight of that country is very much as it was forecast for me by the Japanese Ambassador Motono over twenty years ago.

The Chinese nation is fast going to pieces. Manchuria is already a separate State, Tibet has not only seceded, but has risen in arms against the elusive "Central Government" without a formal declaration of war, according to the abridged rite of to-day. Tibetan troops have occupied Si Kang and the contiguous regions. A Tibetan Empire is being formed under the Dalai Lama. The provinces of Takien and Kiangsi have embraced Communism and set up for themselves under a Sovietist Government. Yunnan is semi-independent. The thriving province of Szechuan is misgoverned by a junta of half-a-dozen rollicking generals, who recognize no authority but their own. In short, the unwieldy State which occupies one fourth of Asia (10.7 million square kilometers) is going to pieces, and the Report counsels Japan to help to prop it up. . . . .

Under the management of that palsied entity Manchuria became a vast asylum of brigands and cut-throats. The state gave the population no protection and the tillers of the soil were ready when the opportune moment came to sack, loot and murder in order to recoup their losses. From the "Central Government"

*Pokotiloff was Witte's representative in Peking.
†A lan was equal to five gold francs 93 centimes.
‡Title of Chinese monarch, who at that time was the Empress Tse-si.
§Imperial Chamberlain to the Tsar.

Japan, whose vast interest and recognized rights were at stake, could get no redress; far from that, the Nanking rulers, behind whom were Americanized Chinese, left no stone unturned to render the Japanese railways valueless. They applied the boycott of Japan's products ruthlessly, and this, together with the guerrilla warfare, was draining her resources.

Finally, she decided to cross the Rubicon. Last year her troops occupied the principal strategic points in Manchuria, which her government promised to evacuate when the Chinese restored order there—a date which corresponds to our Tib's Eve. Meanwhile, she helped to found the new State Manchukuo, under Pu Yi, the last scion of the Manchu dynasty, much as the United States helped Panama to secede from Colombia and form a new republic there just when a new republic became one of the essential requirements of the policy of Washington. And the United States promptly recognized the new State, just as the Japanese government has recognized Manchukuo, and the sanctity of treaties and the integrity of States were never mentioned. The capital of the country was then transferred from Mukden to Changchun, the main strategic and economic center of the land, and it was bruited abroad that Japan, having cast the die, would stand by that.

For it must seem to her that Mr. Stimson's policy is but a duplicate of that conceived by the late Philander Knox, which Russia and Japan and even China rejected because it would nullify their treaty rights. The American answer, making light of the sanctity of treaties, declared that with or without their co-operation the plan would be executed. To-day a similar intention is harbored and the Japanese cannot but resent and resist it because, without their sacrifices in blood and money, there would be no Manchuria to make safe for the white man to-day.

In the Lytton Report one looks in vain for a timely word on the peremptory necessity of racial equality as a condition of peace in the Far East, and for a clear definition of the present meaning of the sanctity of treaties.

To accuse Japan of imperialistic designs in all this is to judge hastily, and probably to misjudge. Those who stand on a height whence a wider view of the situation can be obtained will be more inclined to explain her advance in Manchuria as the result of an irrepressible biological impulse, of a peremptory law of nature, against which artificial restrictions, however cunningly framed, are but as sounding brass or a tinkling cymbal. The whole course of Japan's foreign policy is shaped in the first instance by the stepmotherly hand of Nature, who grudged her space enough for her people, then, by the animus of the governments, which forbade her to increase it, and lastly by the pinch of necessity, which impels her to add to it, and causes the growing restiveness of her proletariat, whose staying powers are well nigh exhausted. The peasants, underfed and downheartd, are clamoring for relief, which is nowhere in sight except in the mirage of Communism, which is eager to receive them.

Ill-Informed America

By MARC T. GREENE

Up to now the colossal ignorance of Americans generally concerning Far Eastern affairs has been taken very lightly, especially by the better-informed to whom it has had something of the mildly amusing character of the whimsicalities of a precocious child. When the American has inquired of a home-visiting China hand whether Tibet is a part of Manchuria or Madagascar one of the Philippine Islands the query has been an excellent jest to be repeated with gusto back on the China coast.

But there inevitably and invariably comes a time when ignorance on any subject has its serious and perhaps even its tragic repercussions. In the matter of Far Eastern concernments that time appears to be approaching. Before it is actually at hand every possible effort should be made to enlighten and to correct ill-informed and misinformed America, to the end that a fair judgment may be rendered on the various points at issue by a nation whose attitude must very largely determine for good or for ill the future trend of affairs in this part of the world.

Never was ignorance of the facts more fraught with danger than in the case of the present Manchurian controversy. Never has a great nation, because of its iniquitous influence, been so likely to do a serious injustice to a friendly Power. Never, then, was the necessity for full and immediate enlightenment more apparent. America must be corrected, and in some fashion that shall carry conviction, in her present all-too-obvious misunderstanding of the Far Eastern situation generally and the Manchurian issue specifically. Quite clearly the present trend is in an opposite direction. Poisoned by flagrant propagandist press argument, swayed by the misdirected sentimentality that is always a great barrier in the way of the attainment of a calm and well-considered judgment on any issue by the American people, misled by political hallucinations and blinded by almost complete ignorance of actual conditions, the American people appear to be on the point of reaching an anti-Japanese position that is as potent with unpleasant possibilities as it is gravely unjust.

Sympathy with China has always been an American tendency, declared more than once in no unmistakeable fashion when the sentiment of the rest of the world was lukewarm to say the least. Yet the average American knows little or nothing of China. He considers the Chinese a nation of laundrymen and "chop sui" makers because that is about all he has ever had occasion to associate them with in the United States. But he reads of their many trials, the famines that afflict them, the floods that drown them by the thousands, the pittance for which coolie and peasant labor, the hard lot that is theirs generally. His characteristically American sympathy with the under-dog therefor goes out to them, and that it does so is highly creditable to him. And if by supporting the Chinese position in the present controversy an improvement in the lot of 999 out of every 1,000 of the Chinese people could be achieved, that would be another thing entirely. But quite the contrary is the actual case.

When the Chinese republican movement began to shape itself into a really vital force early in 1926 it had the sympathy of most of those acquainted with China, especially publicists and educators and missionaries. The reason for this was, it is safe to say, that in the movement there seemed to lie some hope for the suffering millions of the Chinese masses. The avowed intent of the so-called nationalist movement was to raise the country out of the slough of misery and practical serfdom in which it had been immersed for centuries. Hope was strong that republicanism would gradually reduce physical suffering, enlighten illiteracy and raise the nation little by little to the status of a Power that should hold a respected and influential position, if not one of actual parity, in the company of the Powers.

That was the ideal. It was one worthy of sympathy and it received sympathy, as everyone is aware. It received so much sympathy, in fact, that all sorts of unpleasant things, such, for example, as the Nanking affair, were overlooked, and America was the strongest influence in the overlooking. There was a tendency, especially in America, to "give China a chance." Publicists, some of whom have been compelled to listen to frequent "I-told-you-so's" ever since, went about explaining that the system of centuries could not be altered in a few years; that here was a great "psychological" revolution, as well as a physical, which must necessarily attain its ends only gradually; that the "birth-throes of a new nation" could not be otherwise than painful, and so on through the good old platitudinous list of familiar phrases.

How far, then, have all these hopes been realized? And—which is the important point—to what extent does America appreciate that they have *not* been realized? For if they have not been realized, or not appreciably so, then China certainly is not the political unit, the political force, properly to be dealt with in

any international controversy on the same plane with a country that is distinctly a political unit and a potent political force. And any discussion of whatever issue that does not introduce this consideration amounts to nothing more than the application of a set of theories and a collection of generalities to a situation that can be dealt with only on the basis of the existing facts.

What is the condition of China to-day? Does it declare any perceptible advance toward the high ideals so confidently enunciated in 1926? Has there been placed even the cornerstone of such a political structure as may resist the earth-tremblings of a badly-shaken world? Has there been achieved a fabric of economic stabilization or governmental unity capable of taking its place in the company of nations and demanding in all concernments complete parity of treatment? To the first question there is little need of a reply, for the condition of China is all too obvious. To each of the others the answer is definitely in the negative. It is in the negative because of too many reasons to go into here; not all of them, of course, attributable to the weaknesses or the selfishness of the various attempts at a central government which have existed since 1927.

This is the background of understanding necessary for America or for any other people to possess in order correctly to adjudicate the Manchurian issue. Between a nation capable of maintaining a stable and orderly government respected by the world and another nation embroiled in civil wars, banditry and social chaos it is preposterous to attempt to judge by the tenets subscribed to by soundly-administered peoples and unified governments. This is the situation and appealing to treaties or quoting pacts cannot alter it, especially as those treaties and pacts mean nothing to the outlaw hordes whose existence is, after all, the main reason for the presence of a foreign power on territory once ascribed to another country.

All this seems strangely to be left out of America's estimate of the Far Eastern situation and particularly of the Manchurian question, but it cannot be left out and any fair judgment whatever rendered. The Lytton Report itself, a truly masterly effort from a literary viewpoint, is very apt to go down in history side by side with the Baconian theory so far as concerns any value that attaches to it as a constructive document, and why? Because it concerns itself with theories and generalities and fails altogether to consider the main point, which is that China, utterly unable to govern herself to the point of bringing any advantage or even relief from suffering to her own people, is in no way capable of administering Manchuria now or able to offer any convincing proof that she can do so in the near future. This is the fact to be considered first of all, for it concerns equally the welfare of the Chinese themselves in Manchuria, the protection of the Japanese and their interests righteously and legally there, and the safe-guarding of other foreigners and their possessions. All have been in jeopardy since the passing of Chang Tso-lin and will continue to be until Japan succeeds in tranquilizing the country, an end which will be delayed in proportion as an ill-informed world, and particularly an ill-informed America, continues to hamper her efforts by ill-advised criticism and unsound judgments.

It is not necessary to discuss the reasons for Japan's procedure in Manchuria which have to do strictly with her own self-defensive interests, although indeed these are reasons which would influence, and which have influenced, every other nation since time began. But in a strict consideration of what seem to be the "moral" issues it is, of course, impossible to deal with concernments which could, by very meticulous critics, be called "selfish" ones. We must keep to the points which concern, first, the welfare of the people of the country in question, and, second, to those which concern the world generally.

For the world generally, then, most of it having interests of one sort or another in the Far East and a good deal of it having interests in Manchuria, it is all-important that a stabilized state should be maintained there. Japan, if unhindered, can develop and maintain such a state and she intends to do so, heavy though the cost may be. She does not, under any circumstances, intend to withdraw, nor does any fair-minded person familiar with the facts expect her to do so. Even if she should the present chaos would be tenfold intensified, and so it will be if by encouraging China in her intransigeance the rest of the world, especially America, continues to place obstacles in the way of the successful functioning of the Japan-advised Manchukuo. Moreover, whether chaos or peace reigns in Manchuria has an important bearing on conditions elsewhere in the Far East. Not without reason has the northeast been called the "Balkans of the Far East," and the potentialities that phrase suggests were never more imminent than at the moment. The only way they can be averted is through the development of Manchuria into a stabilized state, politically and economically, under the guidance of Japan. Even were the task of bringing about such stabilization turned over to China the world's moral support would not enable her to succeed in fifty years. Only the assistance of an allied military expedition would accomplish anything, and if the Powers intend to try and drive Japan out of Manchuria that is the plan they should be considering, a plan not, however, like to find favor with many Western peoples.

Japan should be left alone in Manchuria, at least until she has shown exactly what she intends to do there and how her methods succeed. And every foreigner in the East who understands the facts and who inclines toward support of the Japanese position should make it a point to work for the enlightenment of those at home who so obviously do not, to the end that the seemingly current opinion in America that Japan is in Manchuria as a purely military adventure be altered in the direction of the actual situation, which is very definitely the contrary. Never were the Japanese people as a whole in a less militaristic mood than at the moment, never were they so anxious for friendly relations with the world, particularly with America, and never were they so courageously struggling with an adverse economic situation in which they deserve the sympathy and not the criticism of the West. And never, likewise, were they, or any people, more determined to carry on with a course they have set themselves to in the interests of their own self-preservation and the good of everybody concerned.

A Significant Oil Deal

WHAT is the exact political significance behind the Japanese-Russian oil deal? There is frequently a tendency to attach too much political significance to the placing of big oil contracts, but in this case the circumstances are so unusual that the question cannot be ruled out.

Japan has always purchased practically the whole of her oil supplies from America in the past. On the basis of the 1931 figures, the Japanese trade is worth 16,000,000 dollars annually to the American interests. This represents a tenth of all their oil exports.

Now Japan has signed a contract with the Soviet Oil Department to take 100,000 tons of Russian oil, and it is stated on both sides that the arrangement is merely the forerunner of more extensive economic relations between the two countries.

There are many circumstances in connection with Japan's policy at the present time which make it obvious that she would prefer not to be dependent on any Western power for the supply of so vital a commodity as oil. This in itself is suggestive, but there are even more significant facts.

The distribution of oil and petrol in Japan is entirely in the hands of three large concerns. If the deal with the Soviet were an ordinary commercial arrangement, one or all of these concerns would have been responsible for it. None of the three, however, is in any way involved. They were not even aware that any negotiations were in progress until the facts were made known generally.

Another important point is that these firms have their usual contracts running with the American oil companies, and their supplies are ample to meet the demands of the Japanese market.

The negotiations have taken place between the chief of the Soviet oil department and a Mr. Matsukata. Enquiries regarding Mr. Matsukata reveal that he has previously been only indirectly connected with the oil industry in Japan, and he is not regarded as having resources to deal with anything approaching such a large quantity of oil as 100,000 tons.

It is not possible to trace any relation between him and the Japanese Government, but the deal has only been made possible by a special arrangement as to the rate of exchange of the yen and the rouble. This raises the question as to whether the Japanese and Russian governments would be prepared to agree to such an expedient for one who, as far as is ascertainable, commercially has only limited resources.

(Continued on page 582)

Air View of part of Nihombashi Ward with new Y.5,446,368 Tokyo Stock Exchange Buildings in foreground. Mitsubishi Warehouse on Yedo River is shown in Center near Yedobashi (bridge). Nihombashi, or Bridge of Japan is at extreme left with main Mitsukoshi Department Store and Mitsui Bank beyond

Tokyo Becomes World's Second City

Capital of Nippon Extends Administrative Boundaries to Nearly Sevenfold Former Area More Than Doubling Population

By W. HARVEY CLARKE, Jr.

AFTER 34 years of municipal autonomy—since 1898, when the inauguration of a self-governing corporate unit was realized for the first time by Tokyo—the emergence on October 1 this year of a remodelled city has set a new stage for its future history. As the enlarged municipal body strives to adjust itself to the multiplied claims of conditions changed in suddenly acquiring an almost sevenfold territorial accession, a 150 per cent rise in population and increased administrative responsibilities, the city of Tokyo, in her principal rôle as capital of the Mikado's Empire and mistress of the fertile savanna of Musashino, spreads her 35 wards, from bayshore and river bank, over the plain's south-eastern section to cover 213.4 square miles of uneven terrain cut by a series of winding waterways.

Eighty-two towns and villages in five suburban counties were absorbed in the recent expansion which created 20 new wards for Tokyo. With the Central Railway Station as a center, the city's periphery now extends beyond a radius of 10 miles in many places. By the election of 60 additional delegates from the new wards, representation in the Tokyo Municipal Assembly was increased from 84 to 144 members.

The merger which transformed Greater Tokyo into the city of Tokyo proper was a process that had been anticipated for a long time. During many years Tokyo's suburban communities had been in effect integral parts of the city itself—in the primary needs of life, in communication facilities, in trade and industry, in promotion of health and hygiene—all except in political administration. The disjoined political status of these towns and villages had become more and more inexpedient with the continued growth of the metropolitan area, not only to themselves but to their mother city, Tokyo, as well. For this major reason their opportune political amalgamation with the neighboring municipality of Tokyo, which finally became a reality in October, was indeed no less than an inevitable actuality.

An Ambitious Program

An extensive program detailing measures requiring an outlay exceeding Y.860,000,000 for the next decade and a half has been outlined by the municipal expansion committee of the city administration. This huge sum of money, intended for the development of better and increased public utilities for Tokyo, includes expenditures for additional school facilities, more paved thoroughfares and roadways, improved parks and further transportation facilities. Approximately Y.384,000,000 of this amount will be used for the benefit of the newly created wards.

(Courtesy of Jikei-kwai Metropolitan Police Board) Dokan Hill of the Yedo Period, as seen by an Early Yedo Artist, perhaps in the Kosei Era of the Reign of Emperor Gohanazono about 465 years ago; Later named for Dokan Ohta, Builder at that time of the First Castle in the Town of Yedo, which is Tokyo to-day

The developmental program for all of Tokyo includes :

Item	*Amount*
Building and repair of roads and bridges throughout the city	Y.330,000,000
Laying of sewer mains in all wards	151,036,280
Improvement of canals and rivers	35,733,000
City-wide enlargement of primary schools and erection of 45 new schools	22,655,000
Establishment of 20 new parks in old city and 32 large and small parks in new wards	12,451,000
Sanitation	10,883,000
Garbage and waste disposal	4,177,000
Construction of municipal markets	3,650,000
In new wards : construction of 22 new civic halls, 10 clinics, seven municipal pawnshops, five employment agencies, four boarding houses, four municipal restaurants and other social service facilities	2,290,000
Total	Y.572,875,280

Resulting from its recent accession to suburban territory, the city of Tokyo has increased its tangible assets by some 57 million yen. Assets of the old municipality of 15 wards, estimated to be about 708 million yen, included the items listed below :

Land	Y.308,000,000
Structures	120,000,000
Buildings	46,000,000
Electric car tracks	44,800,000
Telephone wires	43,800,000
Loans	39,000,000
Rolling stock	34,240,000
Cash	20,210,000
Total	Y.656,050,000

Assets of the new area of 20 wards include the following items :

Buildings	Y.28,000,000
Land	17,000,000
Cash	580,000
Negotiable bills	140,000
Total	Y.42,720,000

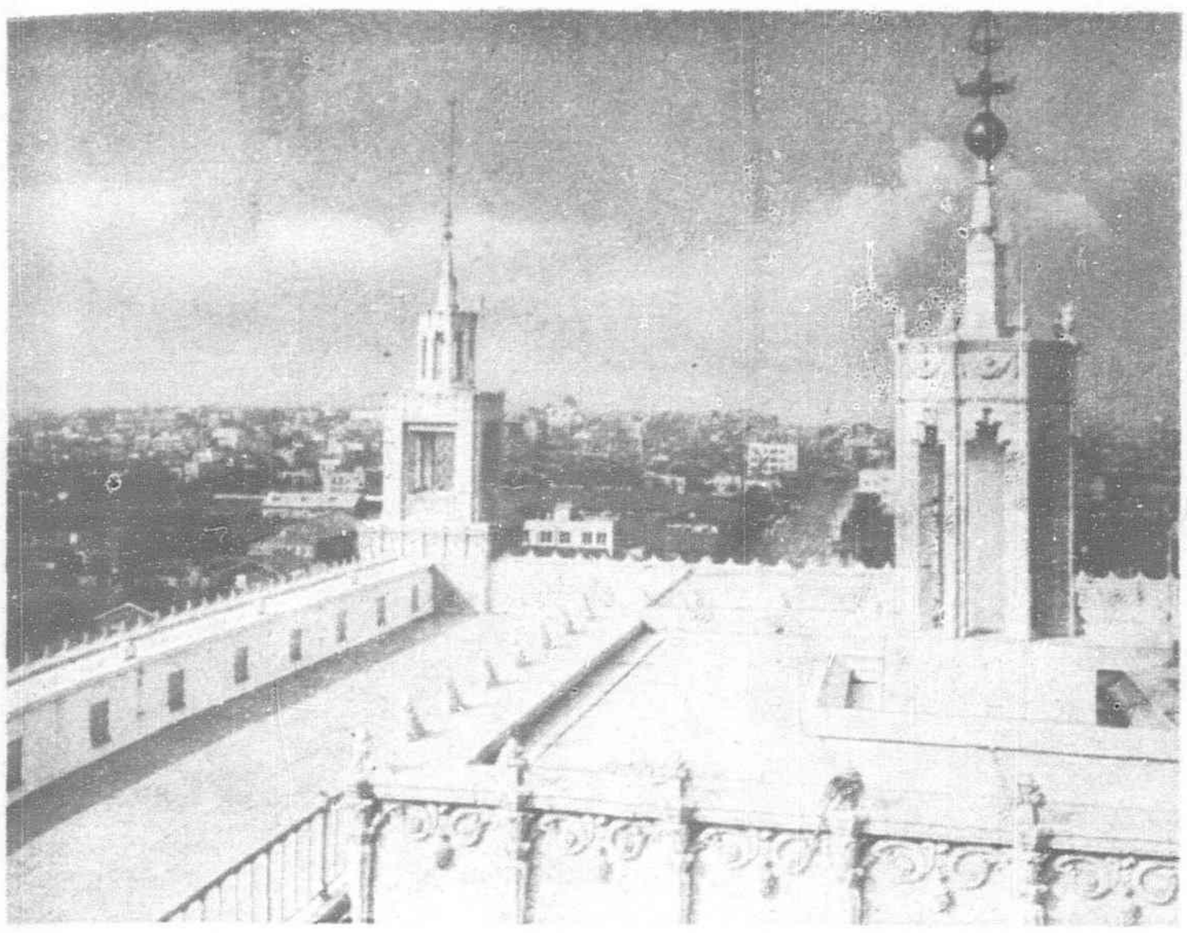
Among the 82 towns and villages incorporated into the city, Shibuya leads the others in value of tangible assets with the sum of Y.4,380,000. When elementary and vocational schools are counted these figures mount to Y.41,690,000.

Reviewing the liabilities of the Tokyo Municipality, it is found that the debts of the old city total Y.609,910,000 and the new area Y.65,840,000, the aggregate of Tokyo's indebtedness to-day approximating Y.675,750,000.

The nearly five and a half million residents within the corporate limits of the city collectively are not responsible for all of these debts, because a portion of them has been invested in diverse productive industrial enterprises—municipal food markets to some extent furnishing the medium. Thus it is expected that some of the debts of the city will be paid out of revenue accruing from these public institutions. The municipality also derives considerable funds from the sale of land reclaimed from Tokyo Bay. Sizeable loans incurred in establishing the Municipal Waterworks system, in operating electric industries and other public utility organizations will be paid from revenue obtained from these sources.

Record of a Half Century

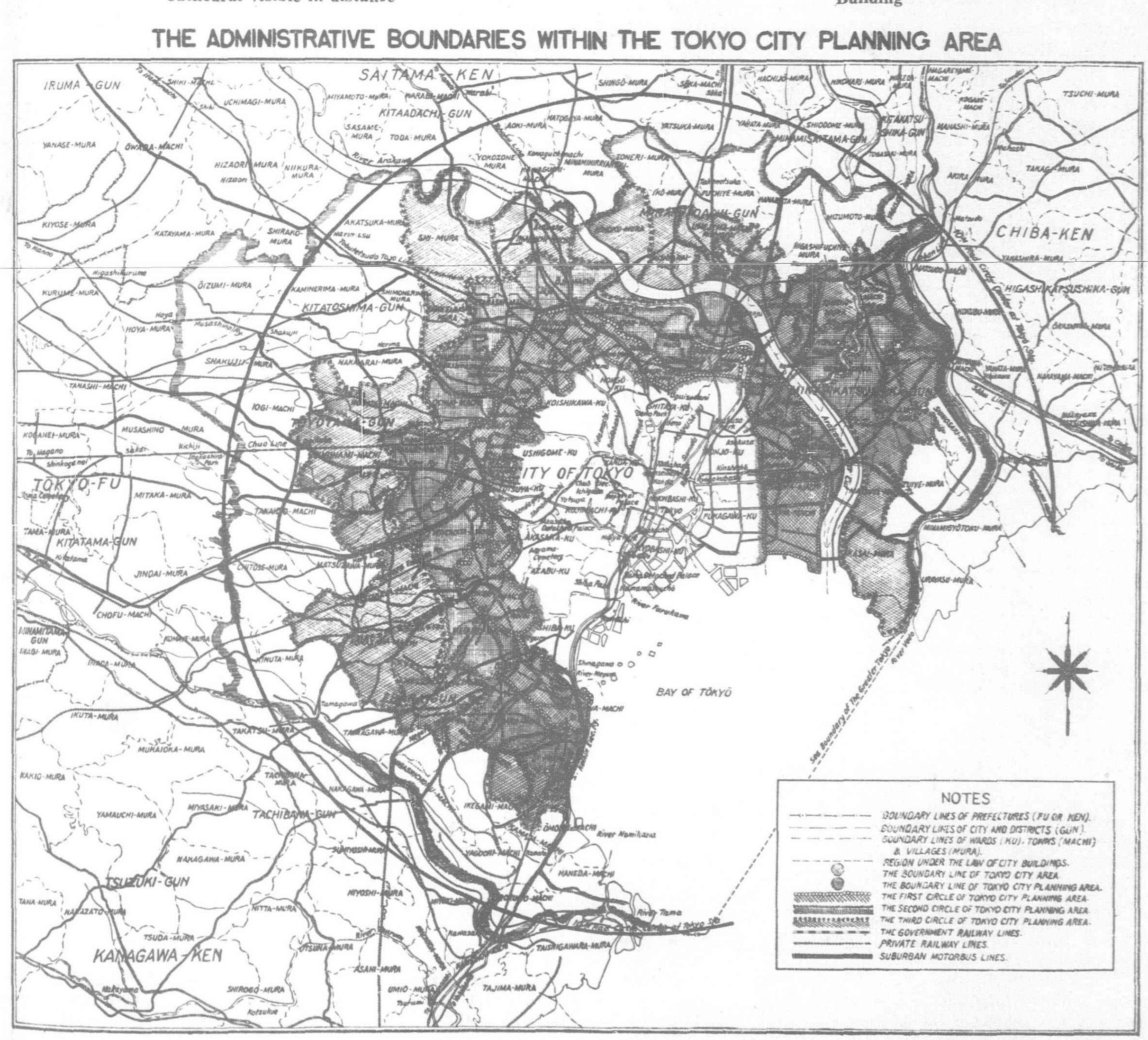
A statistical abstract covering 54 years of Tokyo's periodic increase in population, since the first official city-wide census returns recorded a decade after the Imperial Restoration which took



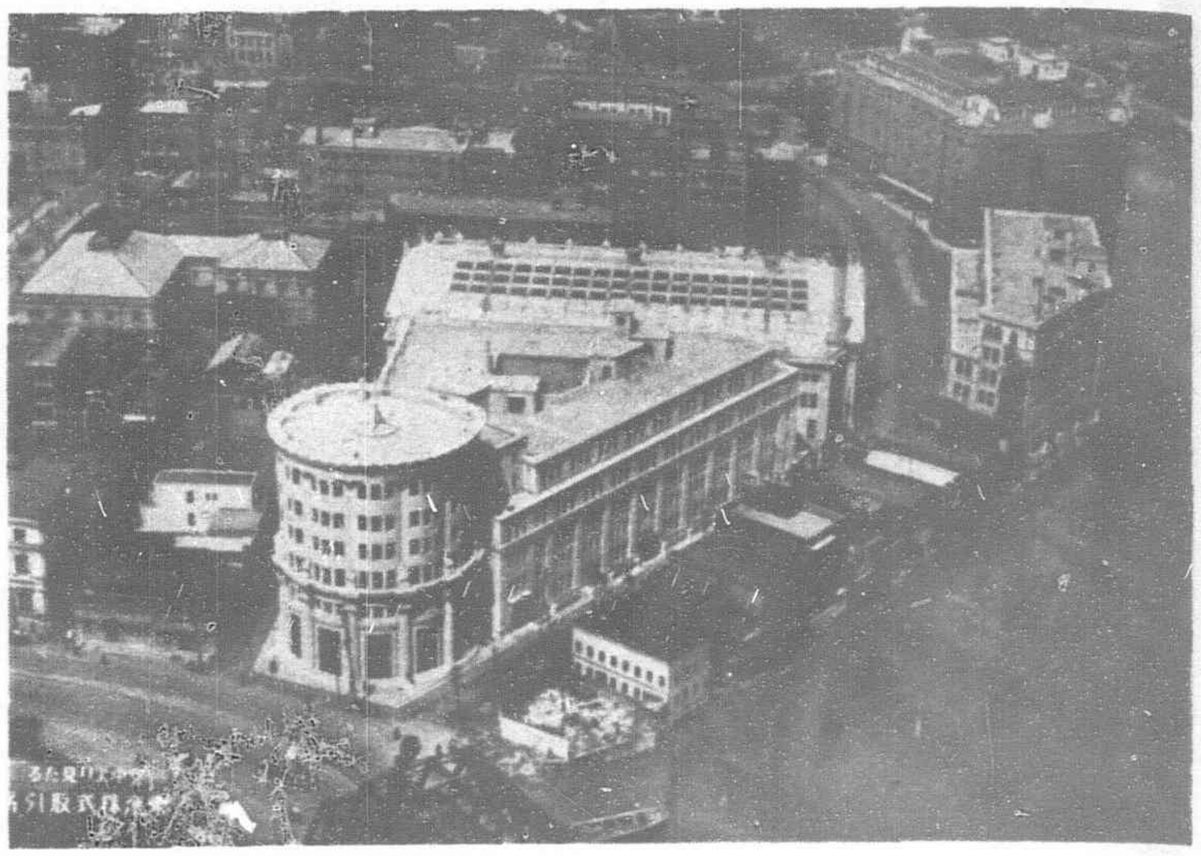
Looking westward toward Kanda across housetops of Kojimachi from roof of new Nisshin (Sino-Japanese) Life Insurance Building near Tokyo Station Plaza, with Dome of Greek Orthodox Cathedral visible in distance

Central Railway Station, Tokyo, Hub of 10-mile Radius circumscribing City, looking down length of Station from entrance toward northern exit. Station Hotel occupies middle portion of Building

THE ADMINISTRATIVE BOUNDARIES WITHIN THE TOKYO CITY PLANNING AREA



Nisshin (Sino-Japanese) Life Insurance Building near Tokyo Station Plaza, Marunouchi, opened October 20 this year; Designed by Koichi Sato and built by Ohbayashi-Gumi, Ltd. at cost of Y.2,300,000



Bird's Eye View of New Edifices Housing Tokyo's Stock Exchange. Rectangular building in rear accommodates Floor of Exchange, cost Y.2,758,018. Triangular Structure in front houses offices of Institution, cost Y.2,688,350. Opened June, 1931

place in 1868, reveals the following steady growth with the exceptions of five irregular year-periods (1889-90, 1899-1900, 1901-09, 1922-23 and 1929-30) :

Year	*Population*		
1878	813,400 (Tokyo's Area 54 Years ago : 24.8 sq. miles)		
1879	825,191		
1880	857,780		
1889	1,375,937		
1890	1,207,341		
1899	1,497,784		
1900	1,497,565		
1901	1,630,000		
1909	1,626,641		
1910	1,807,875	Greater Tokyo : Metropolitan Population Outside Former City Area	T O T A L
1915	2,244,796		
1919	2,359,636		
1920	2,377,884		
1921	2,473,503		
1922 (Year before Earthquake)	2,478,233	1,346,700	3,824,933
1923 (Nov. 15)	1,527,489	1,719,581	3,242,070
(Returns soon after Sept. 1-4 Fire)			
1924 (Oct. 1)	1,626,310		
1925 ,,	1,995,567		
1926 ,,	2,068,900		
1929 ,,	2,294,600	2,431,600	4,726,200
1930 ,,	2,070,913	2,899,926	4,970,839
1931 ,,	2,085,567	3,054,727	5,140,294
1932 (Oct. 1)	2,100,418	3,211,508	5,311,926
	(Area, 15 old Wards : 31.4 sq. miles or 81.219 sq. kilo.)	(Area, 20 new Wards : 182 sq. miles or 471.391 sq. kilo.)	(Area, Tokyo to-day 213.4 miles or 552.61 sq. kilo.)

The metropolitan area of Greater Tokyo showed an annual increase in population of 244,639 between the years 1929-30, 169,455 from 1930 to 1931 and 171,632 between 1931 and 1932, on October 1 of each year.

Taking the old wards of Tokyo as a whole, the density of population is estimated to be about 819 persons per 8.26 acres (10,000 *tsubo*) and in the new wards, 204 persons to the same unit of area.

In comparing the population and area of Tokyo to-day with the five next largest cities of the Japanese Empire, we have the following results :

Population (October 1)		*Area*	
Tokyo	5,311,926 (1932)	Tokyo	213.4 sq. miles
Osaka	2,453,573 (1930)	Kyoto	111.5 ,,
Kyoto	952,404 (1931)	Osaka	71.4 ,,
Nagoya ..	907,404 (1930)	Nagoya	57.4 ,,
Kobe	787,616 ,,	Yokohama ..	51.6 ,,
Yokohama ..	620,306 ,,	Kobe	31.6 ,,

When Tokyo is compared in population with nine of the world's chief cities and in area with six of them, the resultant figures are :

Population		*Area*	
New York City .	6,930,446 (1930)	Los Angeles ..	442.5 sq. miles
Tokyo	5,311,926 (1932)	Berlin	348 ,,
London, Administrative County of ..	4.484,523 (1936)	Shanghai	342 ,,
Berlin	4,297,000 ,,	New York City ..	308.95 ,,
Chicago ..	3.375,235 ,,	Tokyo	213.4 ,,
Shanghai ..	3,150,716 ,,	Chicago	205 ,,
Paris	2,871,039 (1931)	London, Administrative County of	117 ,,
Osaka	2,453.573 (1930)		
Moscow ..	2,412,300 ,,		
Buenos Aires ..	2,153,200 ,,		

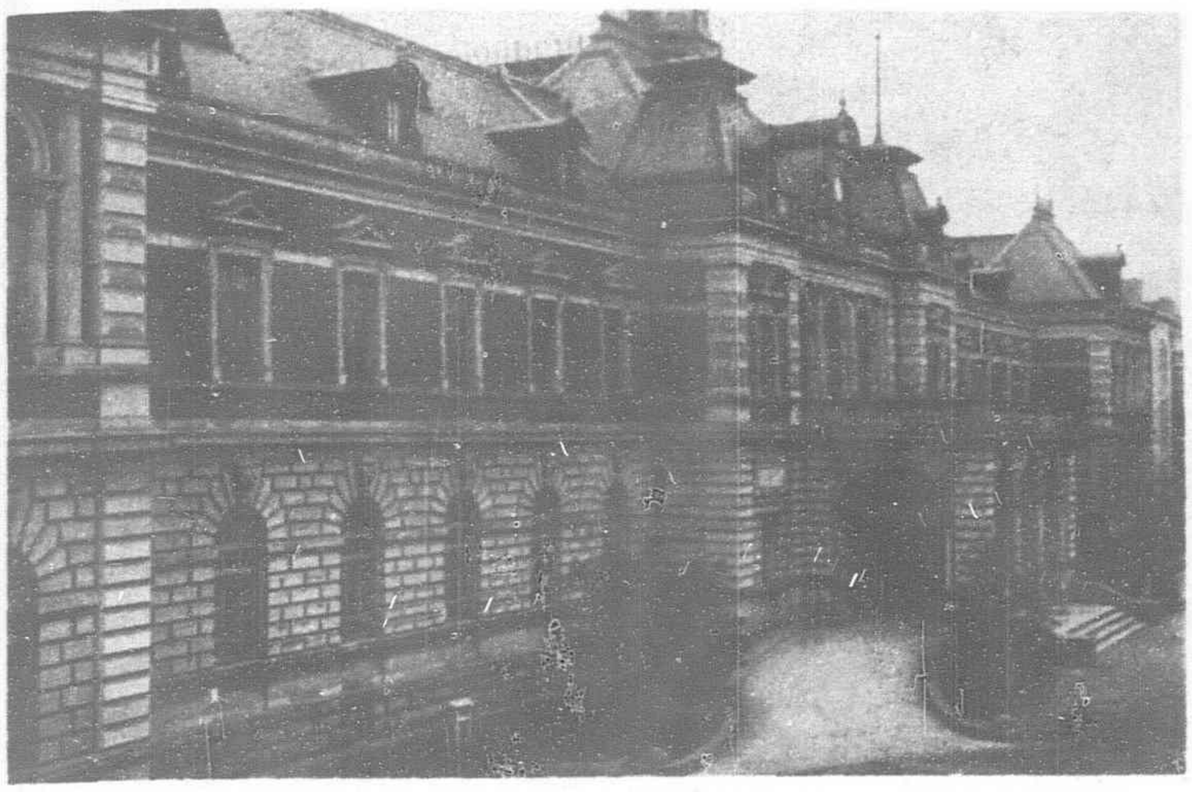
In order to improve further the streets, highways and roads of Tokyo, the municipal administration plans to expend about Y.330,000,000. Of this sum, Y.140,000,000 is intended for the building, improvement and repair of streets, highways and bridges in the new wards of the city, while about Y.190,000,000 will be used in the old wards.

The new communities had already appropriated Y.82,000,000 for street construction, Y.8,000,000 for road building and Y.1,000,000 for street zone adjustment before their incorporation into Tokyo proper. Additional recent appropriations call for Y.45,000,000 for construction of streets and Y.4,000,000 toward street zone adjustment.

A decade ago the streets of Tokyo were circuitous and winding with numerous bends in many places. This crookedness was largely accountable to remains of the street plans of old Yedo, which was thus laid out methodically by the first Tokugawa Shogun, Ieyasu, who had strategic purposes of street fighting in mind should his capital be attacked. But the laying out and building of new thoroughfares after the earthquake and fire in 1923 has practically eliminated these relics of feudal days in Tokyo, which can now claim 32 per cent of paved streets in the entire city of 35 wards and 81 per cent in the former city of 15 wards.

Tokyo, prior to October 1 this year, had 5.68 square miles (14,718,068 square meters) of streets or 16 per cent of the total old city area covering 31.4 square miles. To this was added the area of the streets and roads in Greater Tokyo, amounting to 8.64 square miles (22,382,530 square meters) or 4.7 of its area of 182 square miles, thus making an aggregate of 14.32 square miles (37,100,598 square meters) or 6.8 per cent of Tokyo's corporate area to-day, which is 213.4 square miles.

The combined length of all the streets, roads and highways within the boundaries of Tokyo's 35 wards—classified into the three divisions of Municipal, Prefectural and National arteries of transportation—now reaches a total of about 3,700 miles upon adding 2,860 miles within the city's new area to its former 840 miles of public roadways.



Tokyo's City Hall in Marunouchi Business District

Central and Eastern Wings of St. Luke's International Medical Center, Tsukiji District to be completed in January, 1933, at cost Gold $3,000,000. Builders, Shimizu-Gumi, Ltd.

A distribution of the aggregate paved street area in Tokyo, according to the method and percentage of the kind of pavement in relation to the total area paved, gives the following results:

Classification	*Area*		*Percentage to Total Paved Area*
Surface treatment with asphalt, tar, etc.	1,351.04 acres	(5,464,884 square meters)	46.7%
Asphalt over concrete	734.72 ,,	(2,976,073 ,,)	25.3%
Brick, asphalt blocks, cement-concrete	444.80 ,,	(1,800,323 ,,)	15.3%
Concrete-block sidewalks	272.00 ,,	(1,102,675 ,,)	9.3%
Wooden blocks	82.89 ,,	(335,448 ,,)	2.8%
Stone	18.47 ,,	(74,731 ,,)	.6%
Total (4.54 sq. miles)	2,903.92 ,,	(11,754,134 ,,)	100 %
Gravel roadways (9.78 ,, ,,)	6,260.48 ,,	(25,346,464 ,,)	
Grand Total (14.32 ,, ,,)	9,164.4 ,,	(37,100,598 ,,)	

Regarding Transportation

Urgent popular demand arising from Tokyo's 20 new wards necessitates early measures being taken for increased and more efficient transportation facilities. Consequently, to formulate suitable plans as a sound basis for further service extension to the present city limits, officials of the department for urban communications recently sponsored a meeting to confer with representatives of various private electric railways, motor-bus companies and the Tokyo subway organization.

A city-wide motor-bus system, within the old territorial boundaries of Tokyo, has for a long time been operated by the municipality, which maintains a fleet of about 660 buses in use over routes totaling 134 kilometers in length. Approximately 140,000 passengers ride these conveyances daily and pay fares which average a total of Y.9,000.

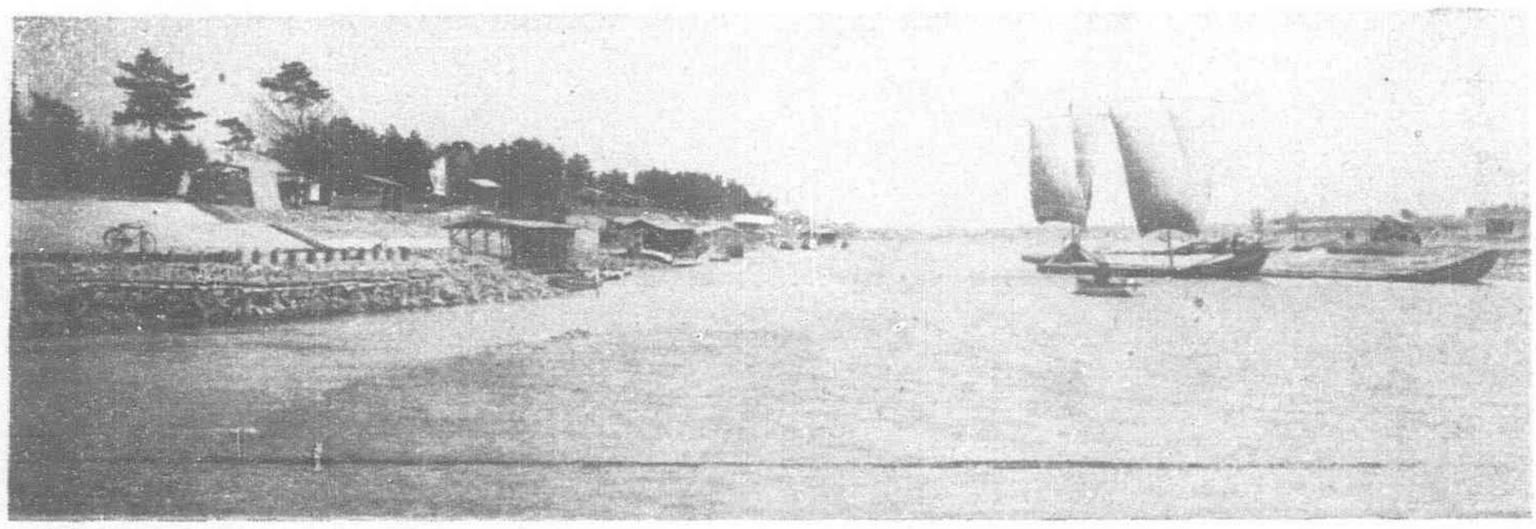
The 15 old wards of Tokyo are adequately served by diverse rapid transit systems. Among them are government railroads (suburban and interurban), an electric elevated beltline, with two cross-city shuttles—connecting downtown Tokyo, Shinjuku, Ueno, Ryogoku and Shinagawa with important way-stations, and extending on to Yokohama as well as other strategic points not far from the city. During morning and evening rush hours, a minimum of from 15,000 to 35,000 commuters an hour use each of the local stations named above. A new 1.7 mile elevated shuttle, built at a cost of Y.8,463,000 including Y.529,000 for the labor and equipment of electrification, opened for service last July. Connecting Ochanomizu and Ryogoku, the stations along this line complete a direct route between Iidamachi on the main shuttle and Chiba Station, Chiba Prefecture, due East from Tokyo.

There are, in addition to these facilities, the municipal street car system—345,000 kilometers long—with rolling stock exceeding 1,600 cars boarded by a daily average of a million and a quarter riders, a veritable network of motor-bus lines—independent as well as the city owned ones—, the Tokyo Underground Railway, a private enterprise, and some 15 other electric lines operating in the new urban areas and the environs of the city.

Construction having been subsequent to the 1923 earthquake and undertaken only within the past nine years, Tokyo's subway is a comparatively new reality. To date, 5.287 kilometers of its right-of-way is in operation, reaching from Azumabashi near Asakusa Park to Mitsukoshi-mae—beneath the department store of that name in Nihombashi. The subway company reports that by January, 1933, the next stretch, 1.186 kilometer in length, will be opened to Kyobashi (bridge). Plans are for the trunk line to extend eventually all the way from its present northern terminus in Asakusa to Shinagawa in the south, a distance of 13.487 kilometers, and to be completed at an estimated construction cost of Y.22,920,073. A branch line, veering in a south-westerly direction from Shimbashi *via* Gotanda, on the southern loop of the around-the-city "L," to Magome and thence to Ikegami, both in Omori Ward, is also projected for the future. When the subway's first section between Asakusa and Ueno Station opened in 1927, building costs had already mounted to more than Y.7,161,209.

Towering Old Pines are not an uncommon sight in the Japanese Capital. These are at Kuhombutsu, Setagaya Ward

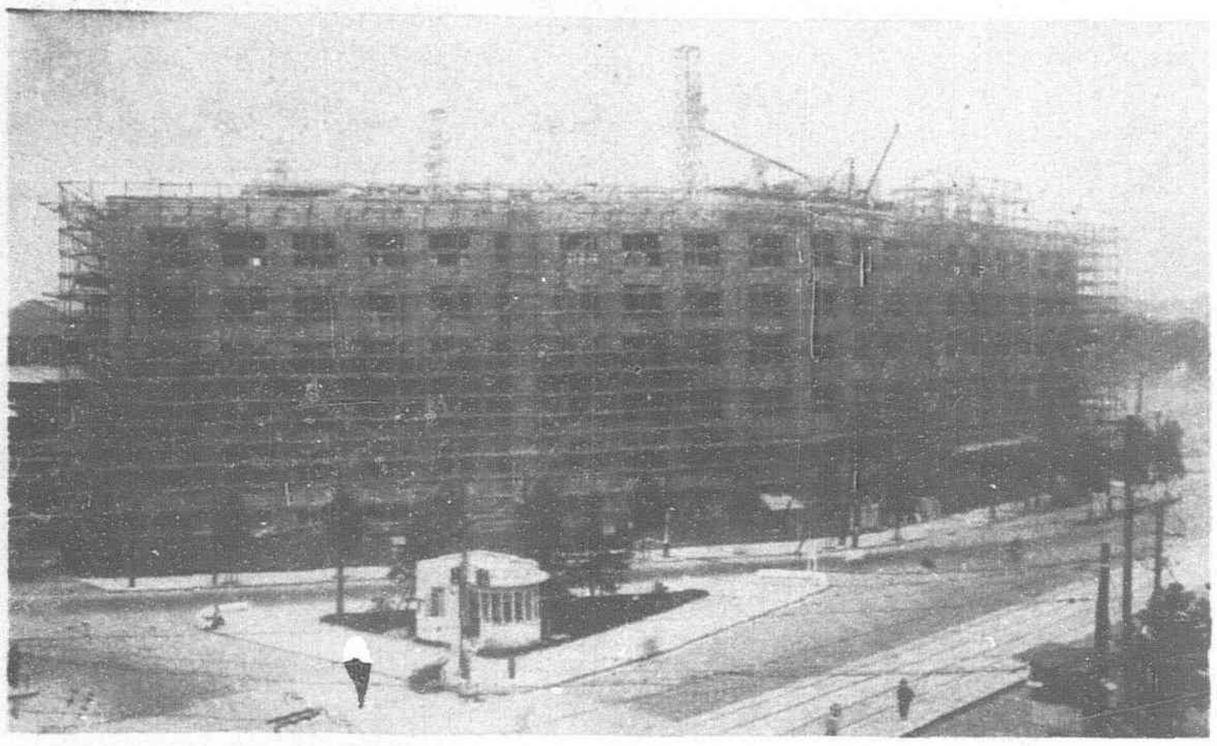
To-day the company has 30 all-steel coaches in service. They measure 16 meters long by 2.593 meters wide, have 44 seats and 76 self-adjustable, white enamel hangers. Including several fractions of a minute way-stops, to ride the length of the underground line thus far completed requires about 15 minutes. An average schedule speed of almost 30 miles an hour is maintained.



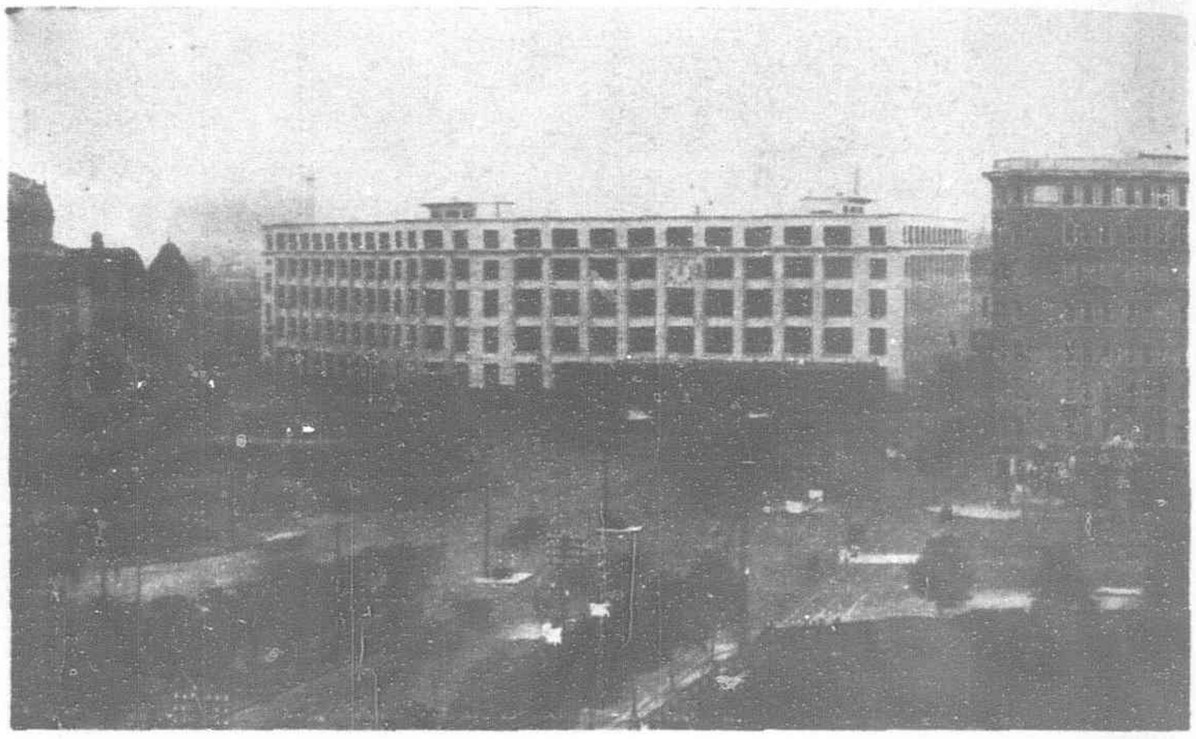
A Tama River Vista, Looking Downstream from Futako Ferry Crossing, Setagaya Ward

Other Improvements

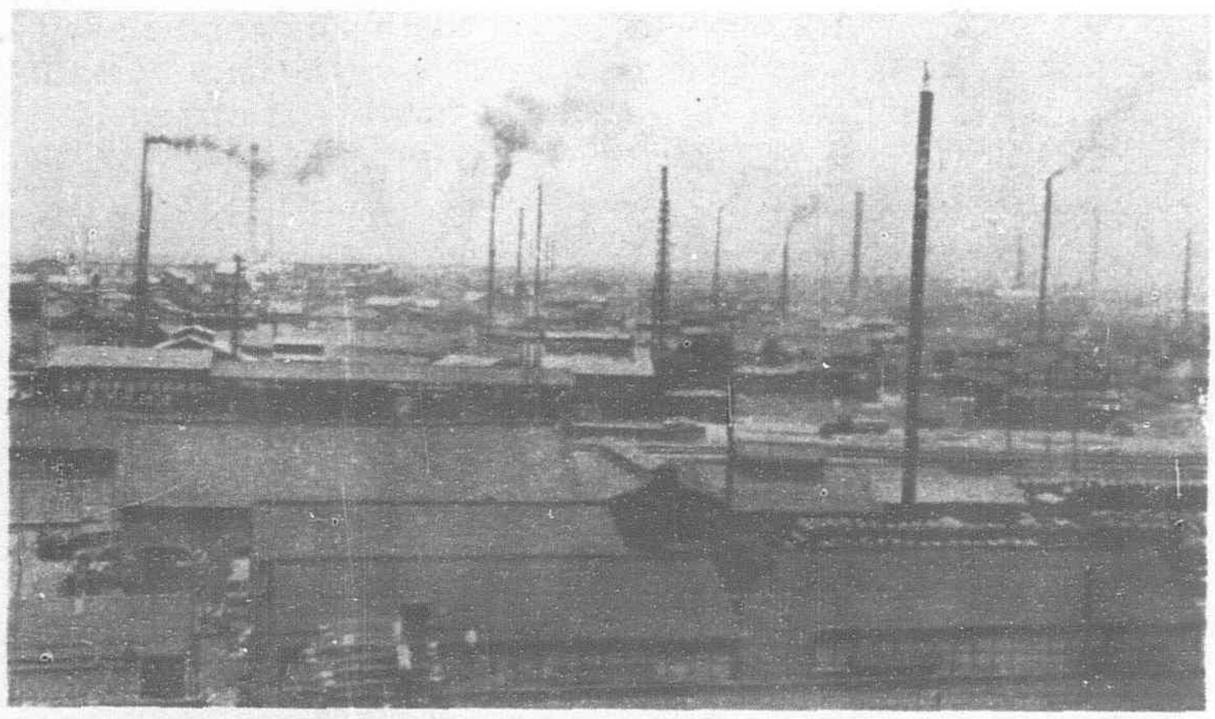
Tokyo's recent expansion has given rise to welcome improvements in delivery of



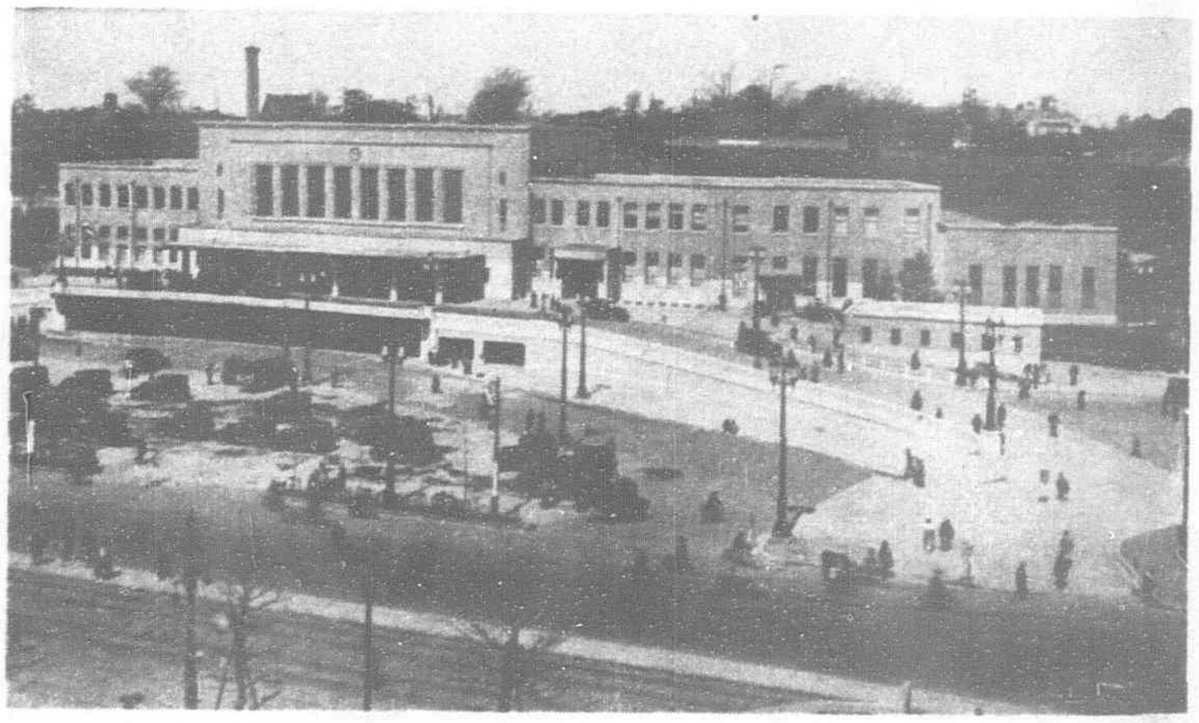
Structure for Government Department of Education to be completed March, 1933, at cost Y.3,537,000 Builders, Ohbayashi-Gumi, Ltd.



Tokyo's Y.5,000,000 Central Post Office to be occupied next spring. Building, excluding Foundation to cost Y.3,070,000. At Right Corner of Marunouchi Building

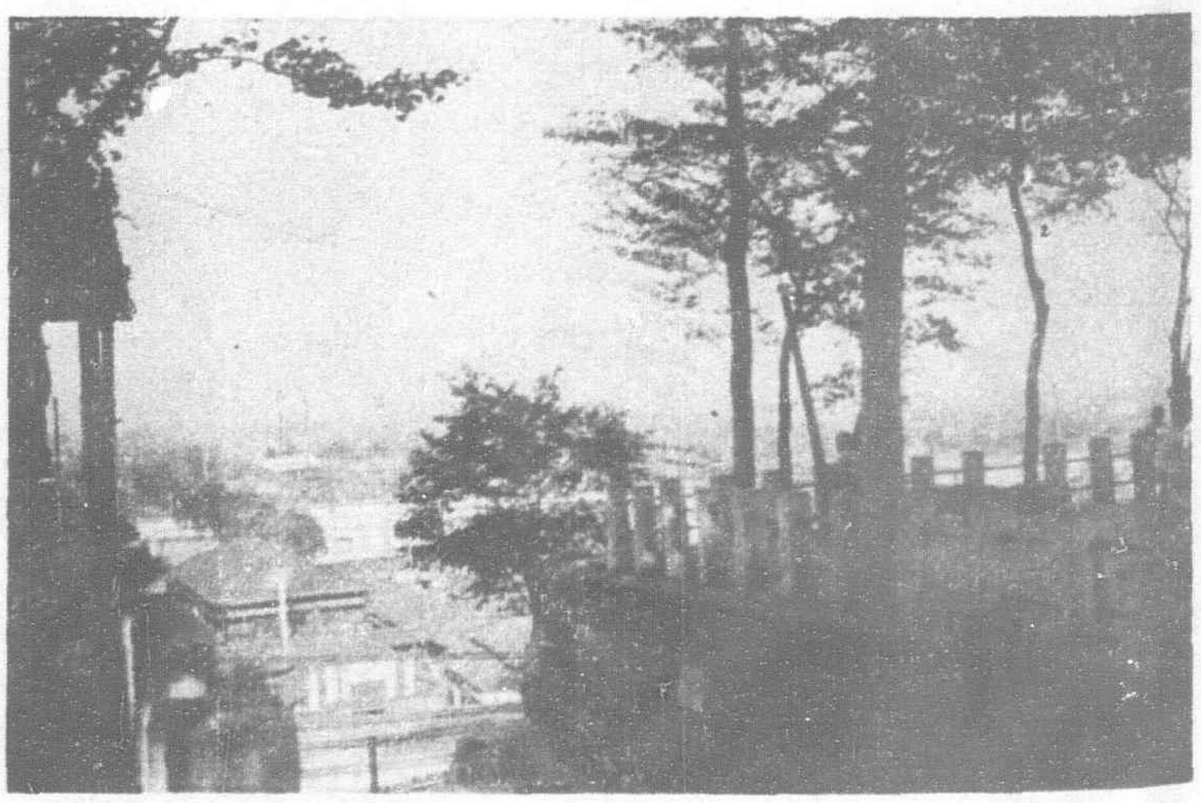


Spinning and Weaving Mill District, Mukojima Ward, where 13,527 Factory Hands are employed. Tokyo produces about Twenty Per Cent of the Empire's Total Industrial Output

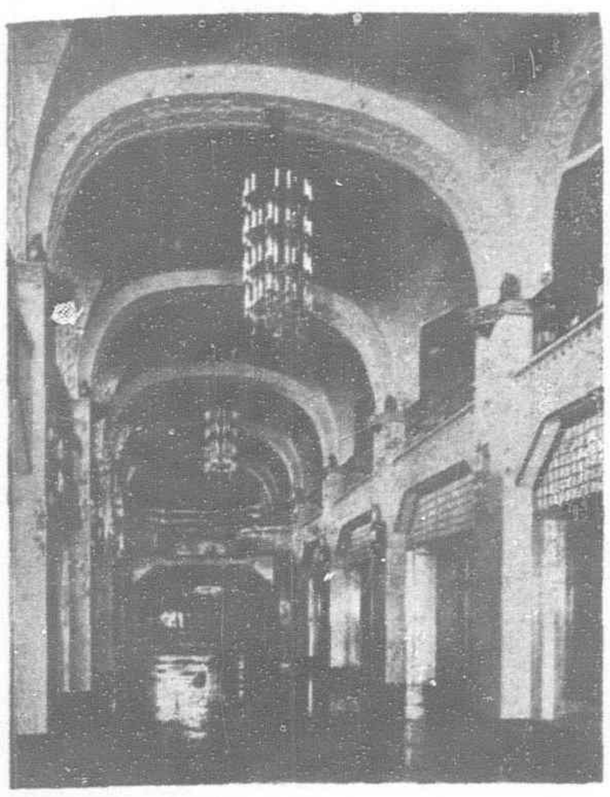


Ueno Station completed last March at a cost of Y.2,700,000. Several Government Trunk Lines in addition to the Tokyo Elevated Beltline and Ueno-Sakuragicho Line converge here

Tokyo's Roadways are continually being torn up, Widened and Paved. The Scene is along Dohgen Hill,, Shibuya Ward



Dokan Hill to-day, Shitaya Ward, Looking across miles of Rooftops toward the recently created Ward of Arakawa



Vestibule and Mezzanine of 8-Story Sanshin Building completed in 1930 at cost Y.3,300,-000, Designer, Kitaro Matsui, Builders, Ohbayashi-Gumi, Ltd.

railway baggage to the more remote communities formerly excluded from city service. After October 1 this year the department of railways agreed to extend this service to the new corporate limits. Moreover, while luggage destined for any part of the old city had been accepted only from lines coming into Tokyo Central Station or the terminals at Ueno, Iidamachi and Ryogoku, now, at the usual rate of 10 sen a piece, baggage is deliverable to any of Tokyo's 35 wards from any city elevated station. On account of this innovation in delivery service, residents of such distant wards as Itabashi, Adachi or Katsushika are especially benefited.

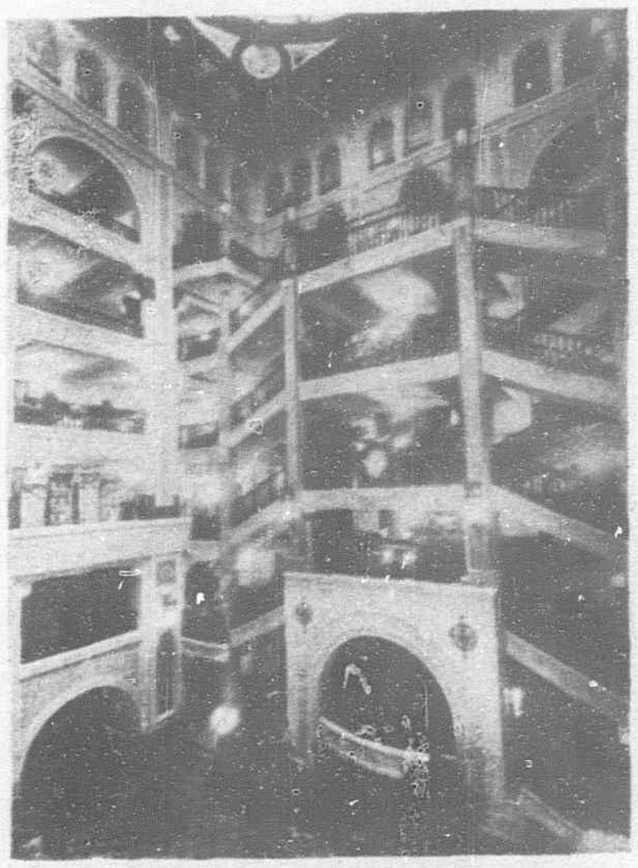
Another development in service put into effect by the railway commission permits passengers leaving a train, *e.g.*, at Tokyo Station, to give instructions for their belongings to be delivered from Ueno or some other urban point—and at no advance in the delivery rate. In the past, contrary to this new regulation, railway luggage was delivered only from the depot to which the owner had bought a ticket.

An almost tripled industrial production has paralleled the accession to territory, expanded administrative functions and increase in population recently undergone by the city of Tokyo. This broadening of the scope of her industrial enterprises has placed Tokyo first among the major cities of the Empire and accredits her with approximately 20 per cent or one-fifth of the nation's total industrial output—thereby at last outstripping even the city of Osaka, which traditionally held the lead in this respect.

Latest official statistics top six billion yen a year as the value of the country's entire industrial production. Tokyo's quota is put at Y.1,250,031,902 annually. In consequence her aggregate industrial output lacks only Y.63,763,230 of being three times as great as that of the former city proper, which was given an annual volume valued at Y.471,265,044.

As published February, 1932, for 1929, total factory production in the five next largest cities of Japan is cited in values for Osaka at about Y.1,019,438,-000; Kobe, Y.340,846,000; Nagoya, Y.324,714,000; Yokohama, Y.310,409,000 and Kyoto at Y.141,148,000.

Apportionment according to diversified industries of the Japanese Capital shows that manufacturing exceeds in value all other branches, with a yearly production of Y.1,197,246,042. Other industries and their annual values assume insignificant proportions when compared with manufacturing. These include fishery operations at Y.18,790,839; the live stock industry, Y.17,974,072; agricultural produce, Y.15,-460,875 and forestry with its Y.559,767 of Tokyo's combined industrial production.



Interior Night View of Matsuya on Ginza, one of Tokyo's Nine Leading Department Stores

Koyama-ginza, Ebara Ward, One of the New Additions to Tokyo

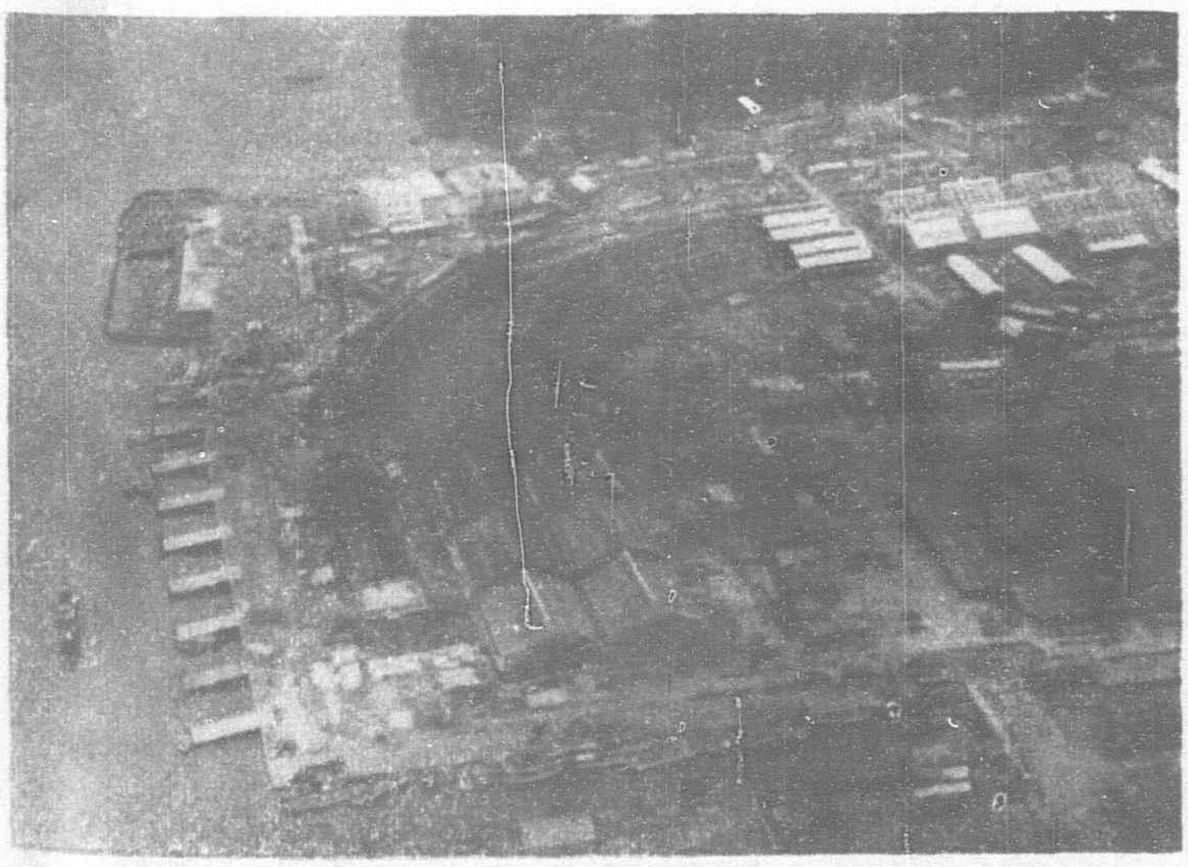
Among the city's 35 wards Jyoto heads the list with manufacturing valued at Y.88,696,153; Omori in fishery at Y.6,161,909; Arakawa in live stock, Y.4,528,614; Itabashi in agriculture, Y.2,607,854 and Setagaya in forestry at Y.152,112.

Chemical Industry Leads

The most important activity in Tokyo's manufacturing field is the chemical industry with a value set at Y.275,521,392 a year; second comes machinery and tool manufacturing with Y.225,790,676, and third, foodstuffs with an annual total of Y.194,805,063.

The list below itemizes Tokyo's different branches of manufacturing and gives their respective annual values:

Item	*Amount*
Chemicals	Y.275,521,392
Machinery and tools	225,790,676
Comestibles	194,805,063
Spinning and weaving	125,050,074
Metal	123,737,838
Gas and electricity	81,470,492
Printing and bookbinding	81,042,604
Lumber and woodwork	25,255,866
Ceramics	14,504,840
Miscellaneous manufacturers	50,067,197
	Y.1,197,246,042



Air View of New Y.15,000,000 Municipal Fish and Food Market under construction near Sumida River Mouth, Tsukiji District Kyobashi. Cost of Building Y.3,648,775

Portion of Wing of Municipal Fish and Food Market having Floor Area of 1,800,000 Square Feet. This is the biggest enterprise of its kind in the Orient

In the new wards of Jyoto and Oji, chemical manufacturing has a stronger hold than in any of the other 33. The combined chemical production of Tokyo is distributed in the following approximate amounts: rubber goods, Y.20,000,000; soap, Y.21,000,000; industrial chemicals, Y.25,236,035; fertilizer, Y.34,000,000 and paper leading with a value of Y.35,000,000 a year.

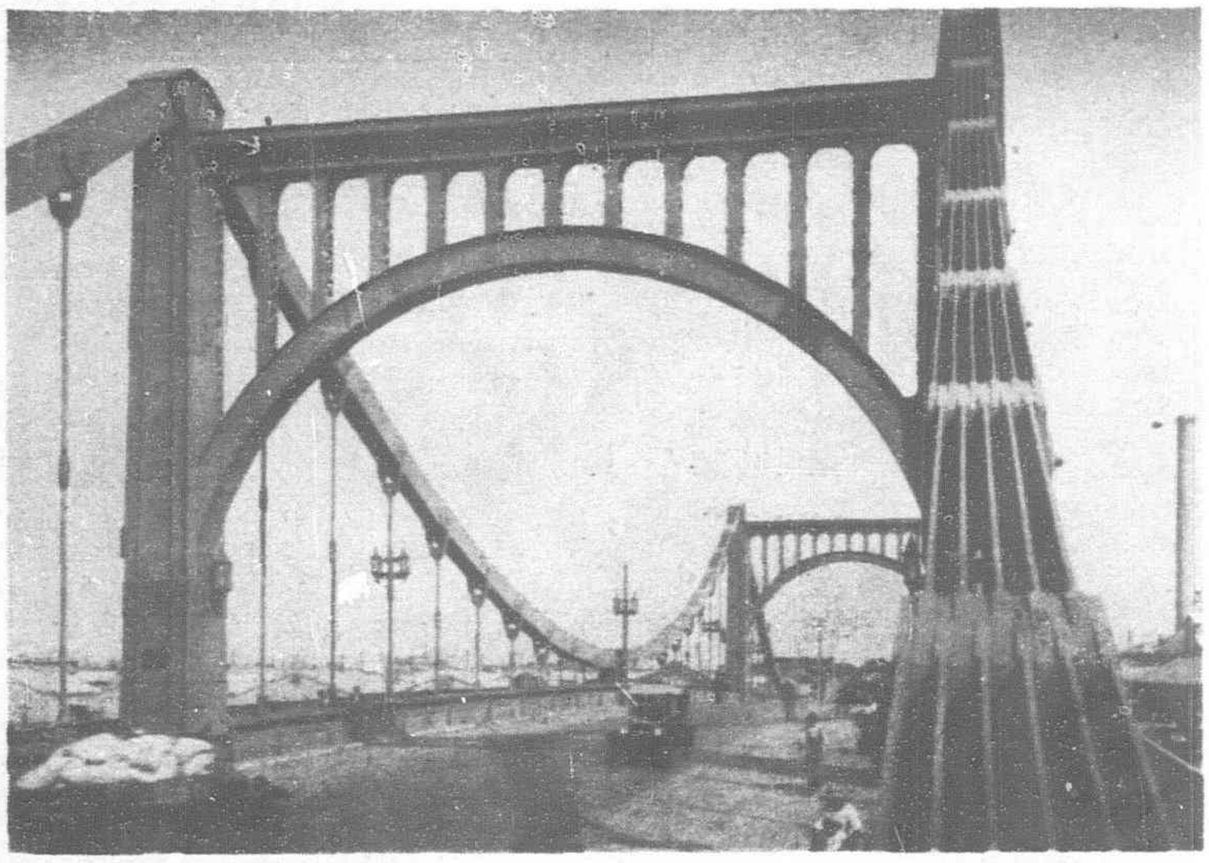
In the manufacture of machinery and tools, the municipal electric bureau together with private concerns produce annually Y.3,188,138 worth of electric bulbs, and dry batteries along with other lighting equipment reaches a total of Y.30,639,927. Electric motors, other machinery and tools, which are produced chiefly in the new wards of Kamata, Omori and Shinagawa, aggregate Y.21,136,141 yearly.

Under foodstuffs, sake (rice liquor), beer and other brewery products are valued at Y.27,932,352. Flour heads the list with Y.12,052,477, while bottled drinks and shoyu (soya bean sauce) come in with Y.2,888,131 and Y.1,195,110, respectively. Miso (a bean paste) is also made in Tokyo, the former city proper alone reporting an annual production worth Y.2,500,000, while the figure for the city to-day reaches a total of Y.5,274,355.

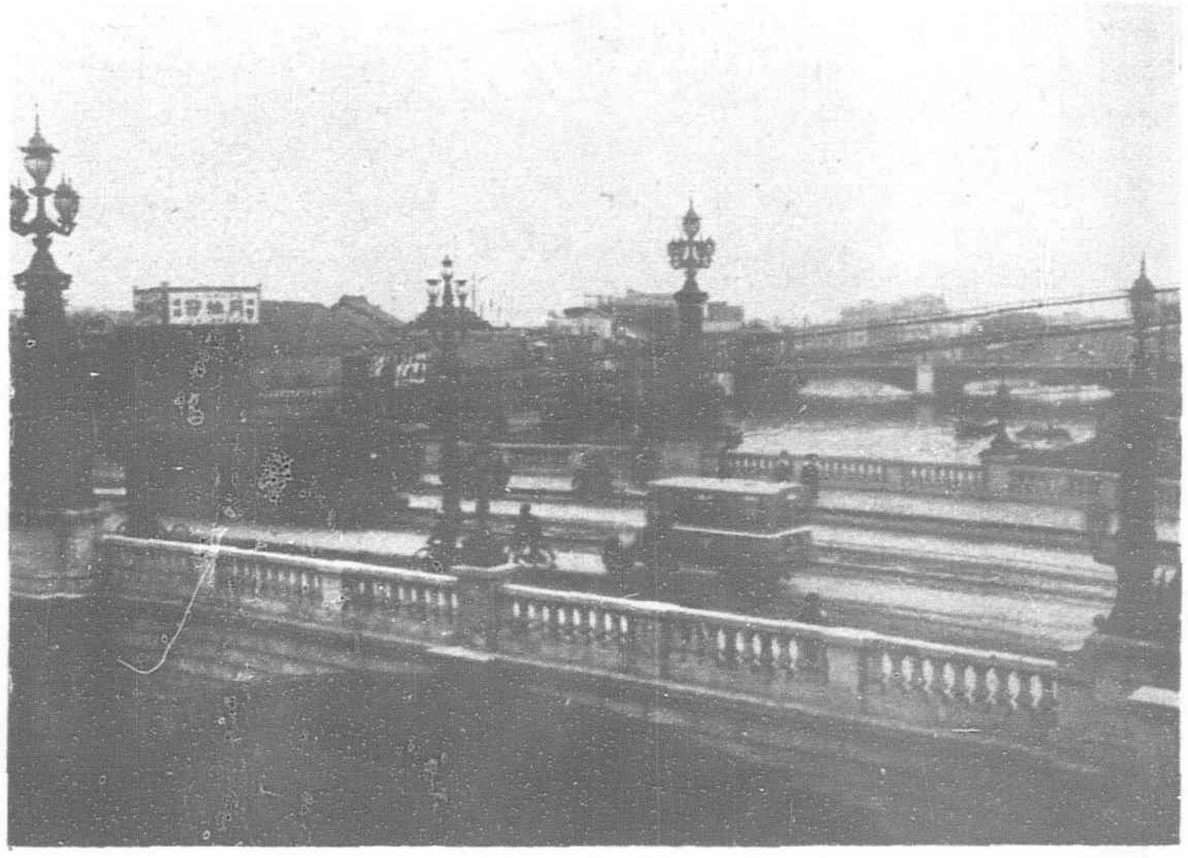
For the products of spinning and weaving, the mills of which are largely confined to the three new wards of Mukojima, Katsushika and Jyoto, the annual output valued at Y.125,050,074 includes Y.45,605,654 for spinning, Y.44,370,200 for weaving; knitted goods and hosiery at Y.15,649,002; dyeing and bleaching, Y.11,838,048 and thrown silk, prepared cotton and corded goods combined, Y.6,040,221.

Under the item of metal products, Tokyo accounts for electrical wire worth Y.22,536,010, materials for systems of communication, Y.16,674,732, rolling stock, Y.25,041,394 and dockyard supplies worth Y.10,957,271.

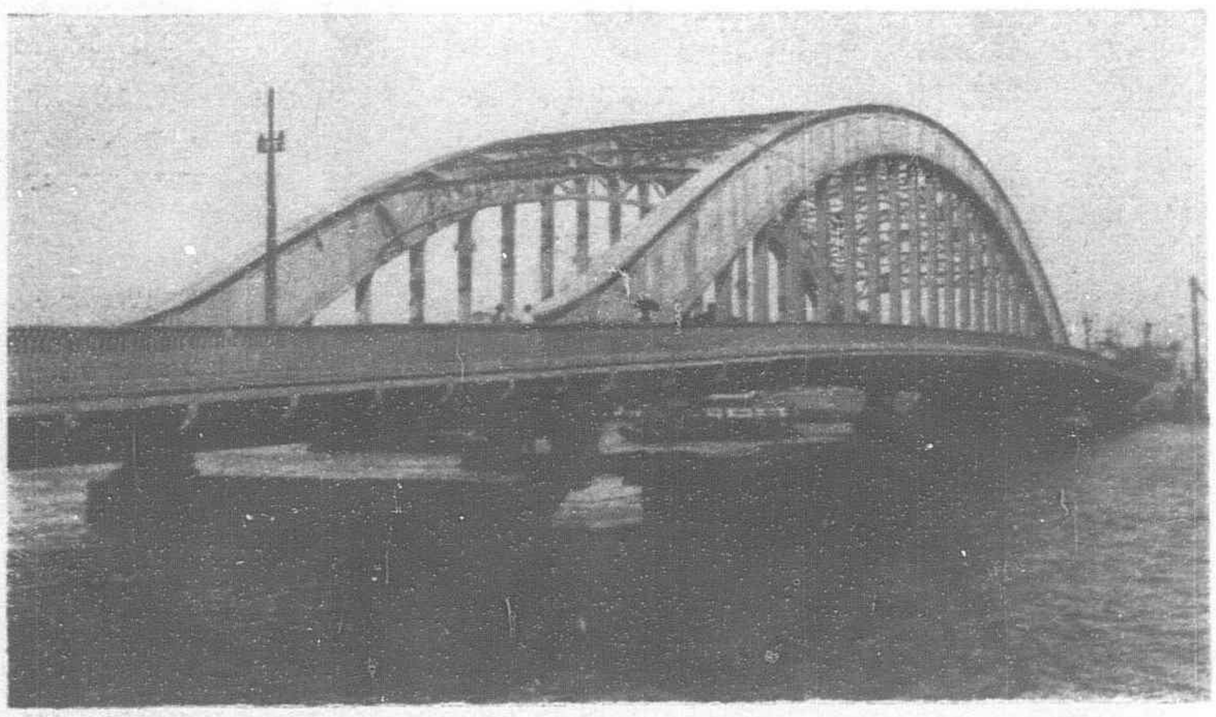
A FEW OF THE BRIDGES OF TOKYO



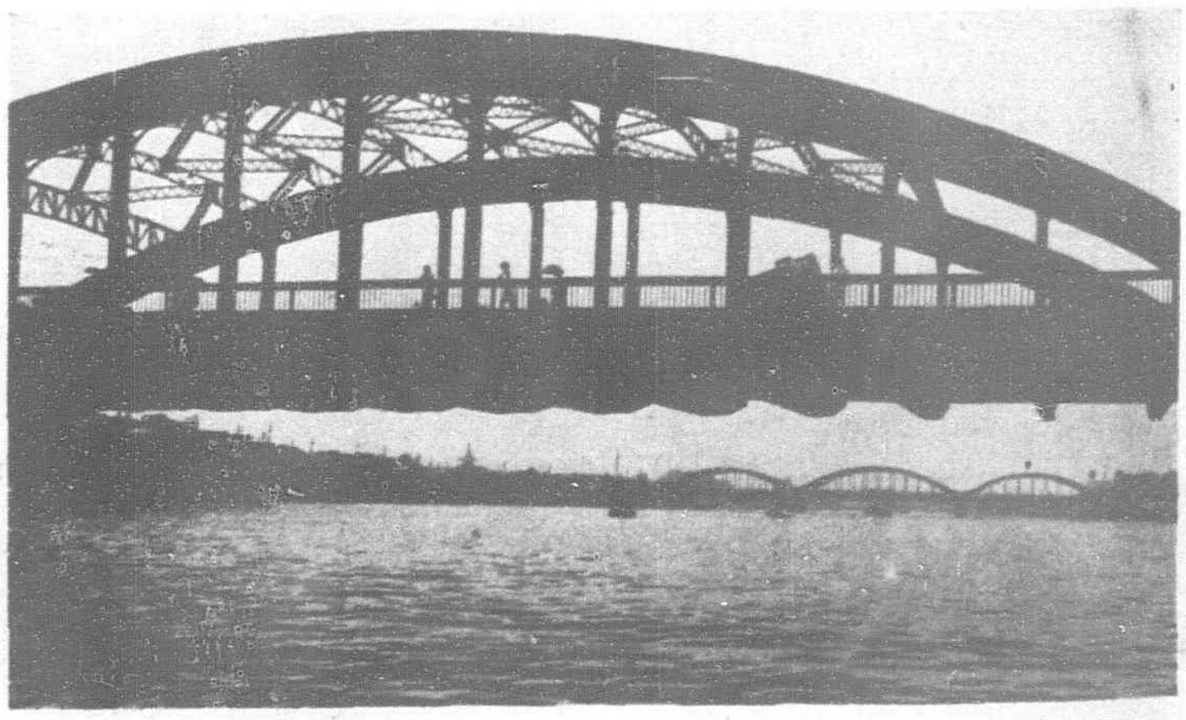
Kiyosau-bashi, One of 11 New Bridges Spanning the Sumida, 186 Meters Long, 22 Meters Wide, cost Y.3,100,000



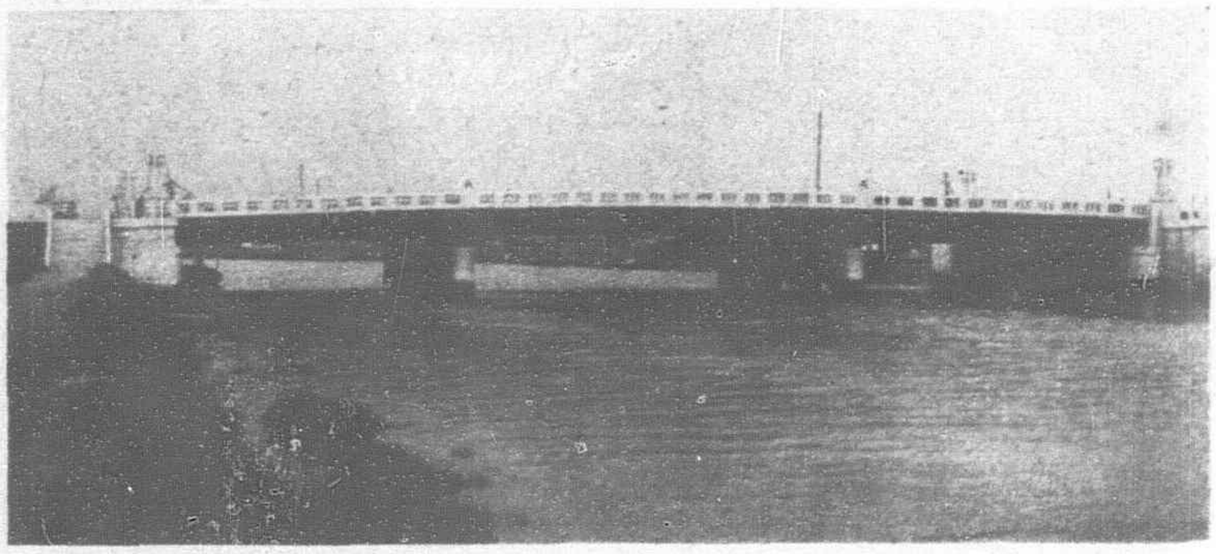
Recent View of Nihombashi as it appears to-day



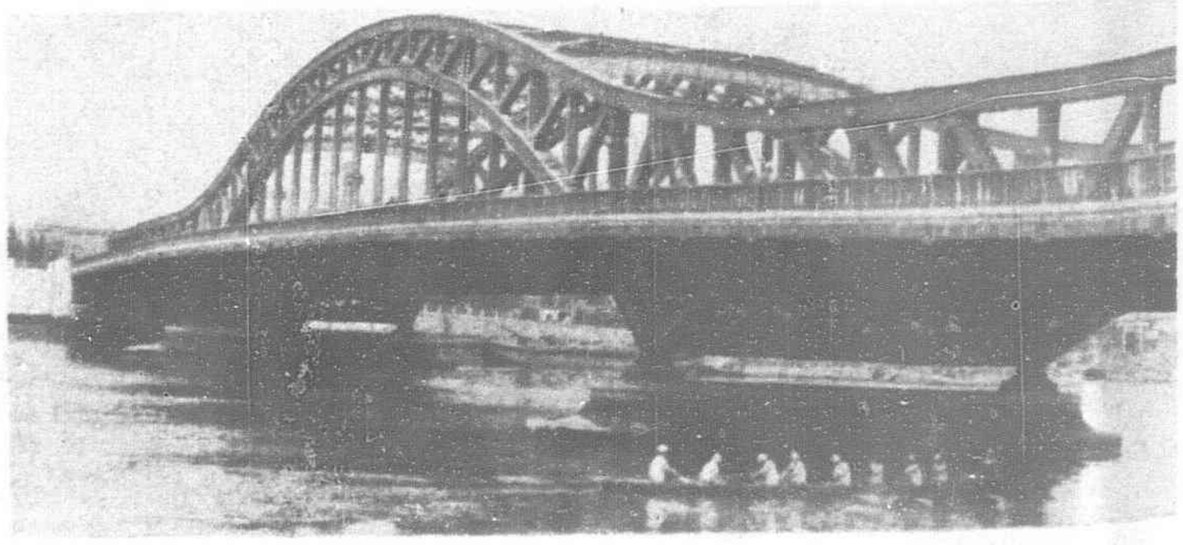
Eitaibashi to-day, a Symmetrical Feat of Japanese Bridge Engineers, 184 Meters Long, 33 Meters Wide, cost Y.2,000,000



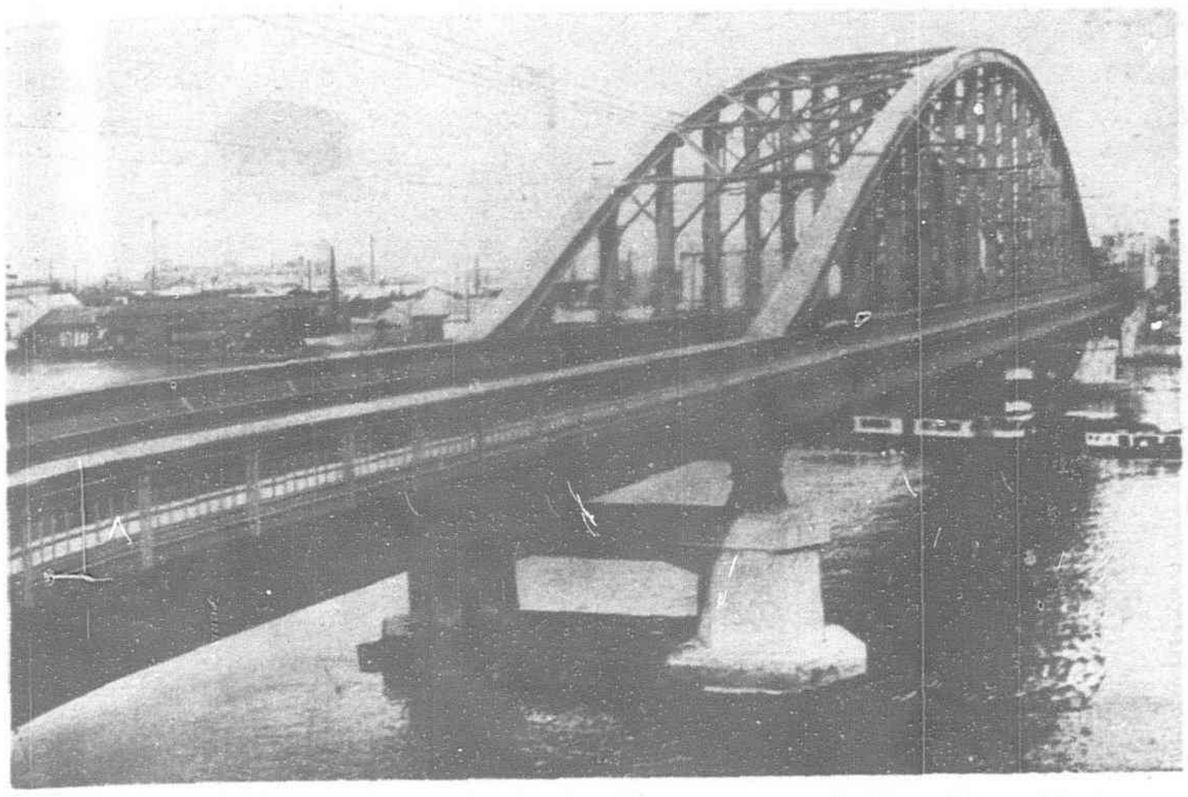
Komagata-bashi, Umaya-bashi in the Background. Two of the New Structures Spanning the Sumida River



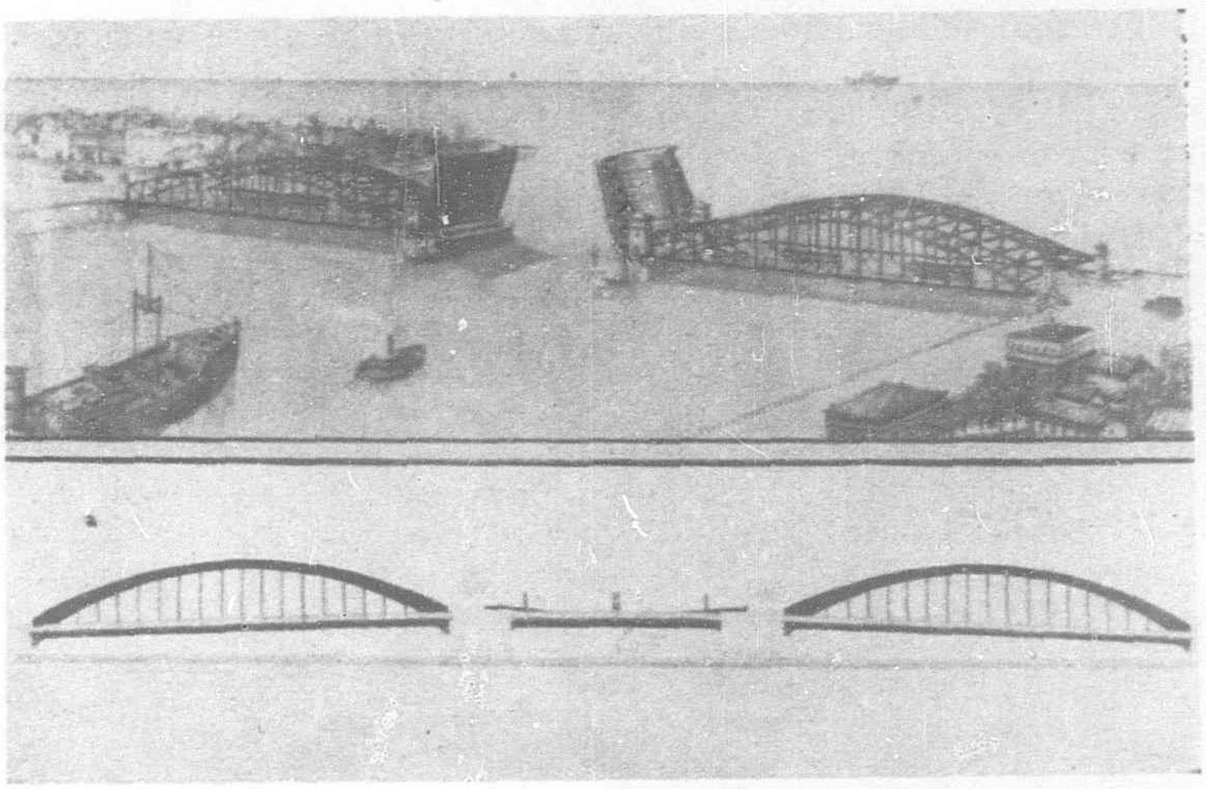
Tokyo's Newest Large Bridge, Nakagawa-Shimbashi, Yedogawa Ward



Shirahige-bashi, Mukojima Ward, the Farthest Upstream of the New Bridges over the Sumida



Sumida River Bridge went into service last July for New Cross-City Electric Elevated connecting Ochanomizu and Ryogoku Stations. Bridge and Viaduct 2,669.9 Meters Long, cost Y.2,815,100



Architect's Drawing of First Mechanical Drawbridge to be built in Japan, Designed to Link Lower Kyobashi Ward with Tsukishima Island. To have Span of 810 Feet, Width 72 Feet. Cost Y.3,000,000

The Factories of Tokyo

Factories in Tokyo to-day number 6,982, including 4,484 in the old city and 2,498 in the recently acquired wards. In these factories, employees exceed 166,531 workers, of which number about 128,640 are men and 37,891 women. Apportioned to the various 35 wards of the city, Honjo stands first in number of factory employees with 19,568, Shiba follows with 13,656 and Mukojima comes third with 13,527. Two other wards having more than 10,000 workers are Jyoto with 10,942 and Shinagawa with 10,183.

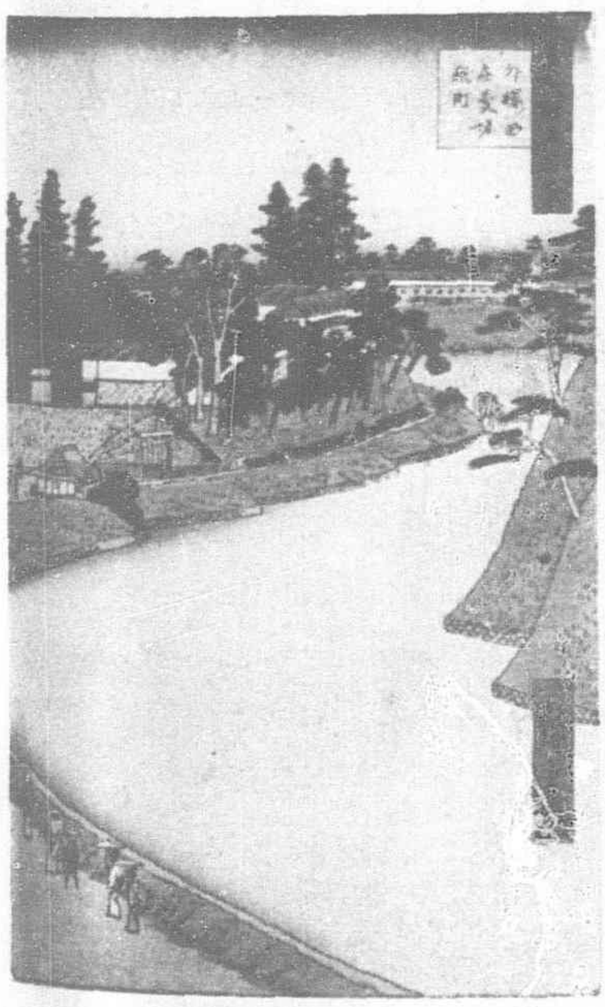
In enumerating the number of employees of the factories in each of Tokyo's wards, the following distribution is shown :

New Wards	*Number of workers*	*Old Wards*	*Number of workers*
Mukojima	13,527	Honjo	19,568
Jyoto	10,942	Shiba	13,656
Shinagawa	10,183	Fukagawa	7,692
Arakawa	9,654	Kyobashi	7,116
Toshima	5,850	Koishikawa	4,880
Omori	4,808	Kanda	4,844
Oji	4,276	Kojimachi	3,767
Adachi	4,079	Ushigome	3,645
Kamata	3,917	Asakusa	3,419
Shibuya	3,521	Shitaya	2,915
Katsushika	3,516	Hongo	1,978
Yodobashi	2,808	Azabu	1,960

New Wards	*Number of Works*	*Old Wards*	*Number of workers*
Takinogawa	2,787	Nihombashi	1,521
Itabashi	1,943	Yotsuya	549
Yedogawa	1,744	Akasaka	497
Meguro	1,369		
Ebara	1,291	Total	77,007
Suginami	901		88,524
Setagaya	720		
Nakano	688	Grand Total ..	166,531
Total	88,524		

Tokyo's Metropolitan Police Force now comprises 12,773 officers assigned to 72 different stations. Forty of these stations are located in the new wards and 32 in the old ones. Accompanying the recent incorporation of 82 suburban towns and villages into Tokyo proper, various adjustments in the jurisdiction of police stations within the new limits of the city became inevitable. With the co-operation of the newly added communities, necessary changes are now in course of being carried out.

In attempting to solve numerous and intricate civic problems of peace and order in an area the population of which has risen to very nearly five and a half millions, metropolitan police officials have resolved to increase the individual as well as collective efficiency of the existing force so as to be able to deal more effectively with the growing possibility of crime in the city.



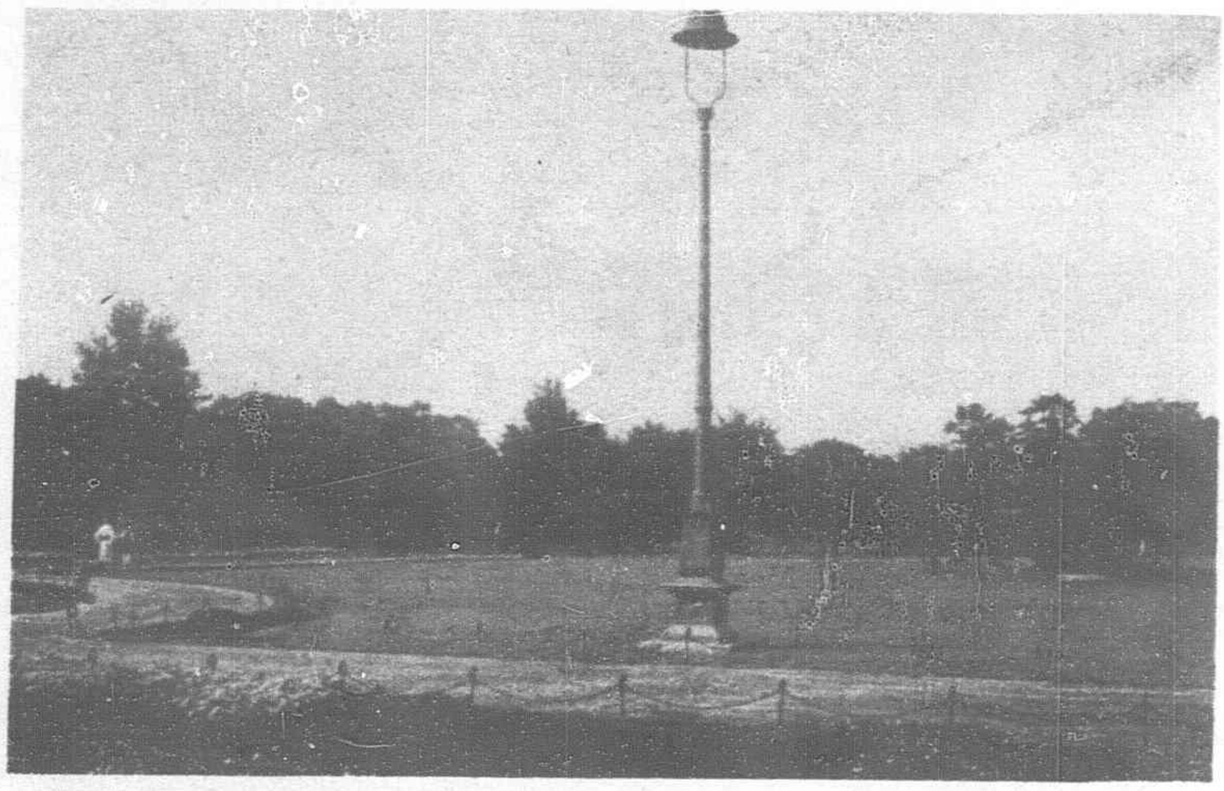
Benkei-bori or Moat as seen from Sakurada Gate a Century and a Half Ago by Noted Ukiyoye Artist, Hiroshige I, (1797-1858)

Benkei-bori or Moat to-day from top of Wall by Sakurada Gateway to Imperial Palace. In distance is new Diet Building erected at estimated cost of Thirty Million Yen

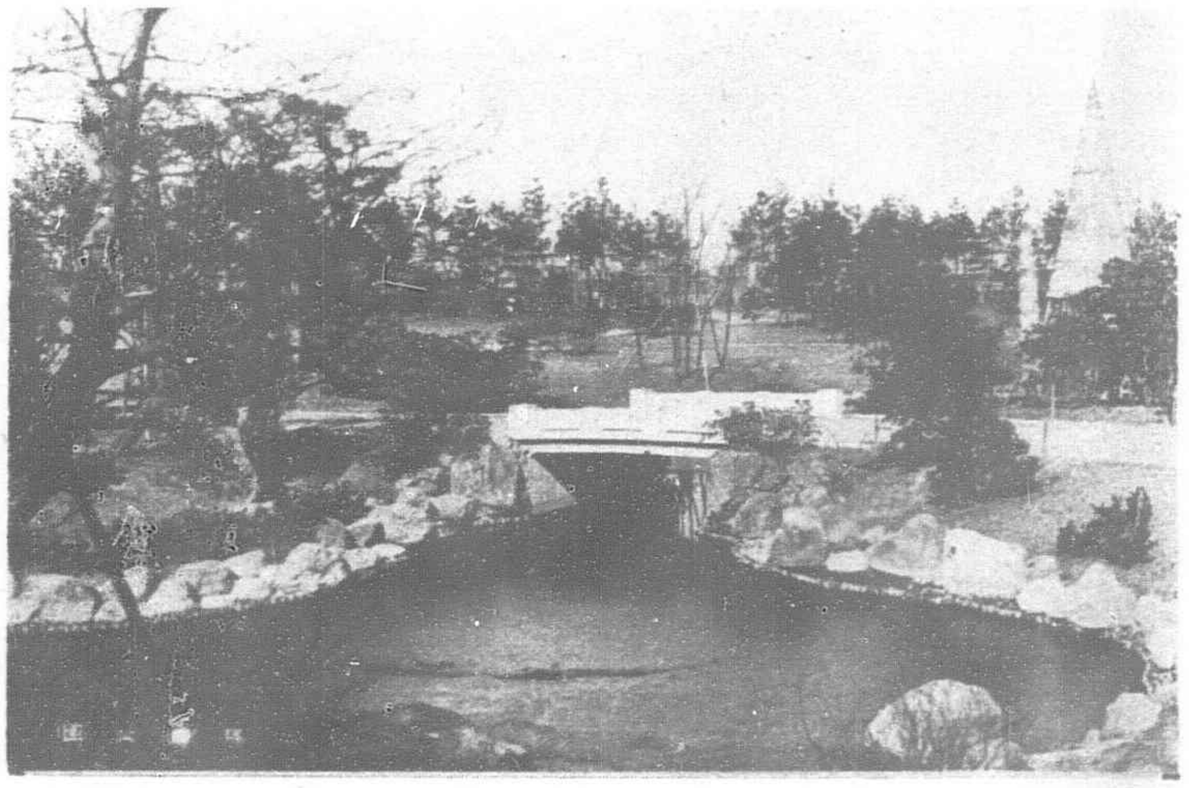
Within the old area of Tokyo during 1931 there were 158,-633 offences committed, which come under the classification of crime listed in the penal code of Japan, and successful prosecutions have been estimated at as high as between 70 and 80 per cent of these figures. However this may be, records point to the undeniable fact that crime is steadily increasing despite the inexorable surveillance of the Metropolitan Police board. Recent statistics show that the average monthly increase approximates 1,000 offences. Thus in an effort to combat this continual upward trend of crime, the Tokyo police, directed by Chief Rokuichiro Ono, have resorted to more scientific methods. Results so far, from application of such measures, indicate some degree of satisfaction.

The Fire Department

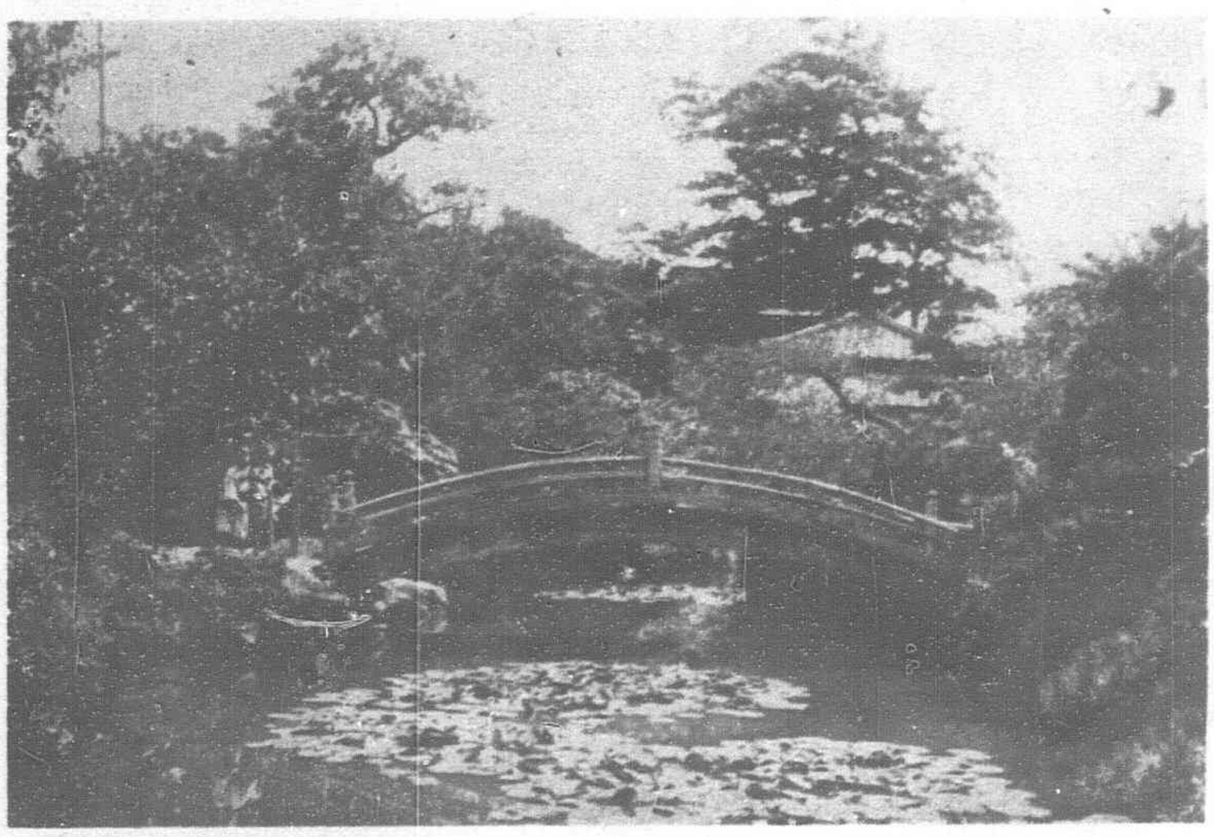
Of old, Tokyo was noted for recurrent conflagrations. Fire, at one time in the city's history, was called the Flower of Yedo (Tokyo of pre-Meiji Eras). Fire fighting, therefore, is acknowledged even to-day to be one of the police board's essential duties.



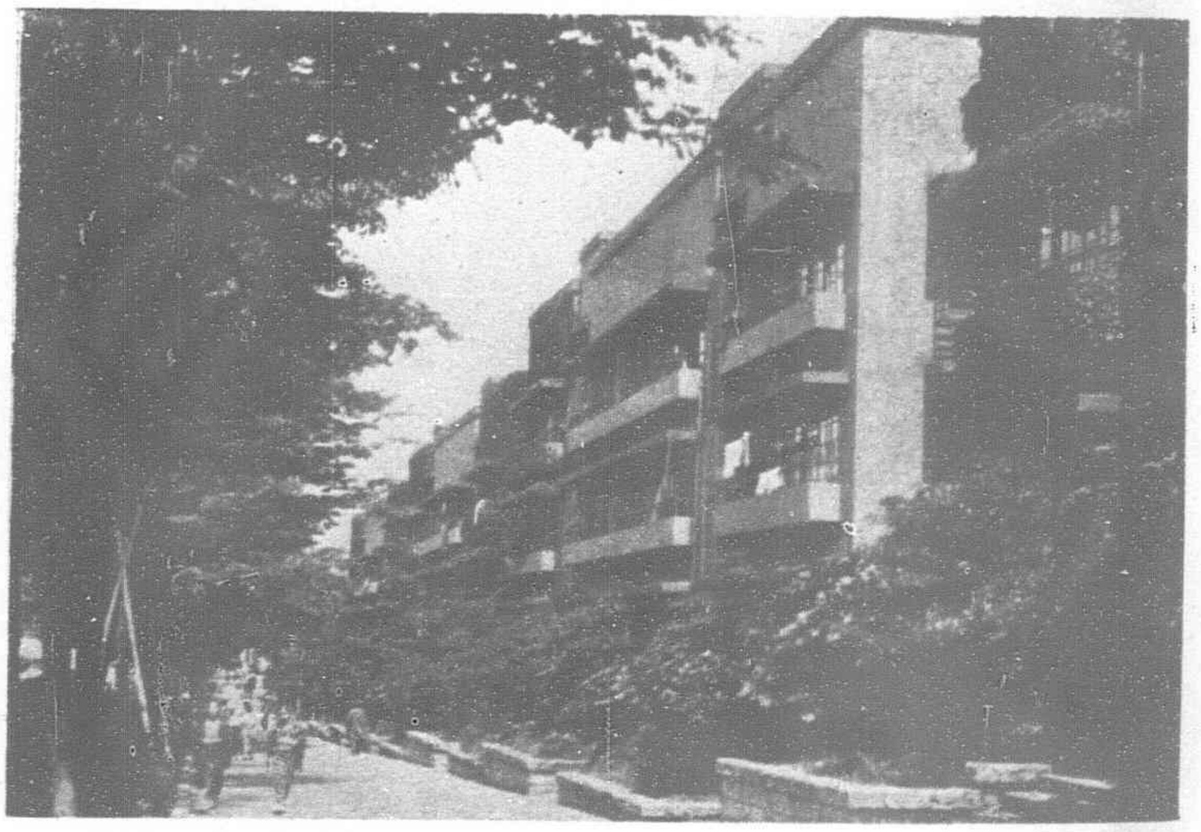
A Group of Tall Cocos Plumosos lends a tropical touch to Hibiya Park and its Multi-Flowered Parterres



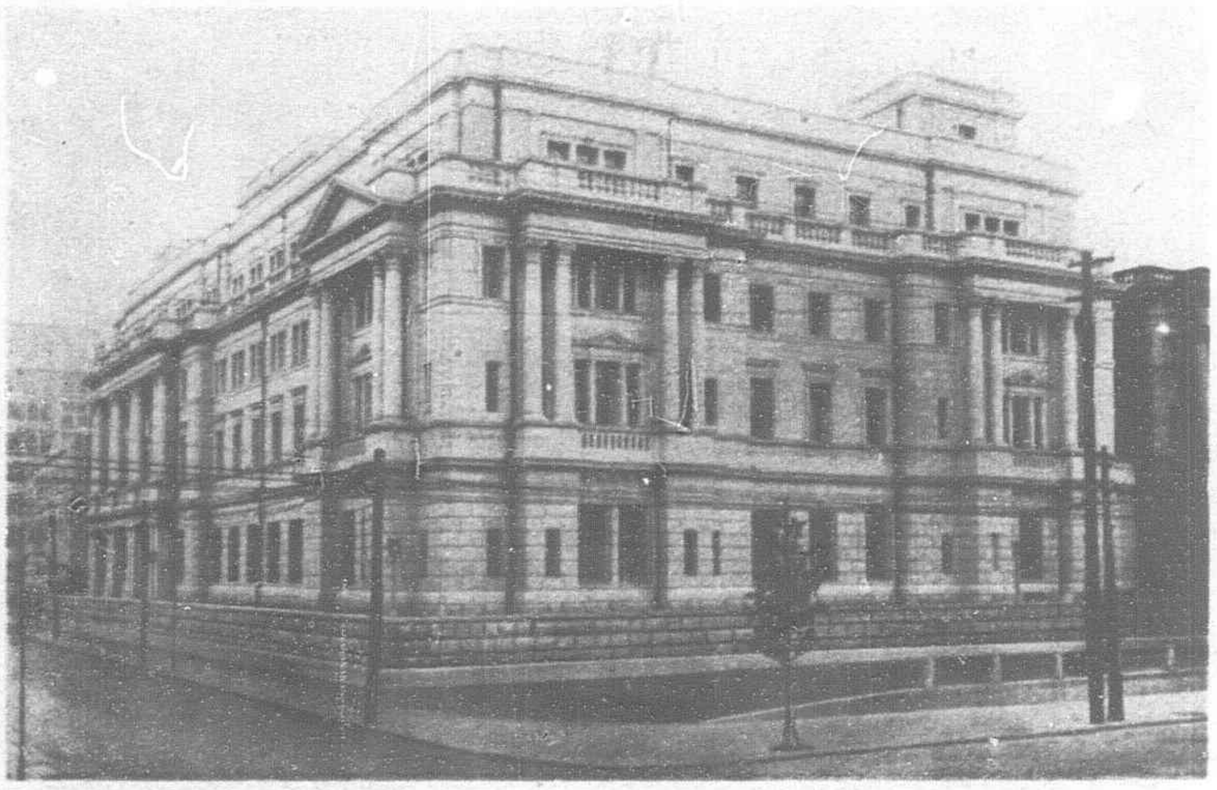
In Winter a limpid stream winds under a bridgeway in Sumida Riverside Park laid out at the 1923 Earthquake along both banks of the Sumida



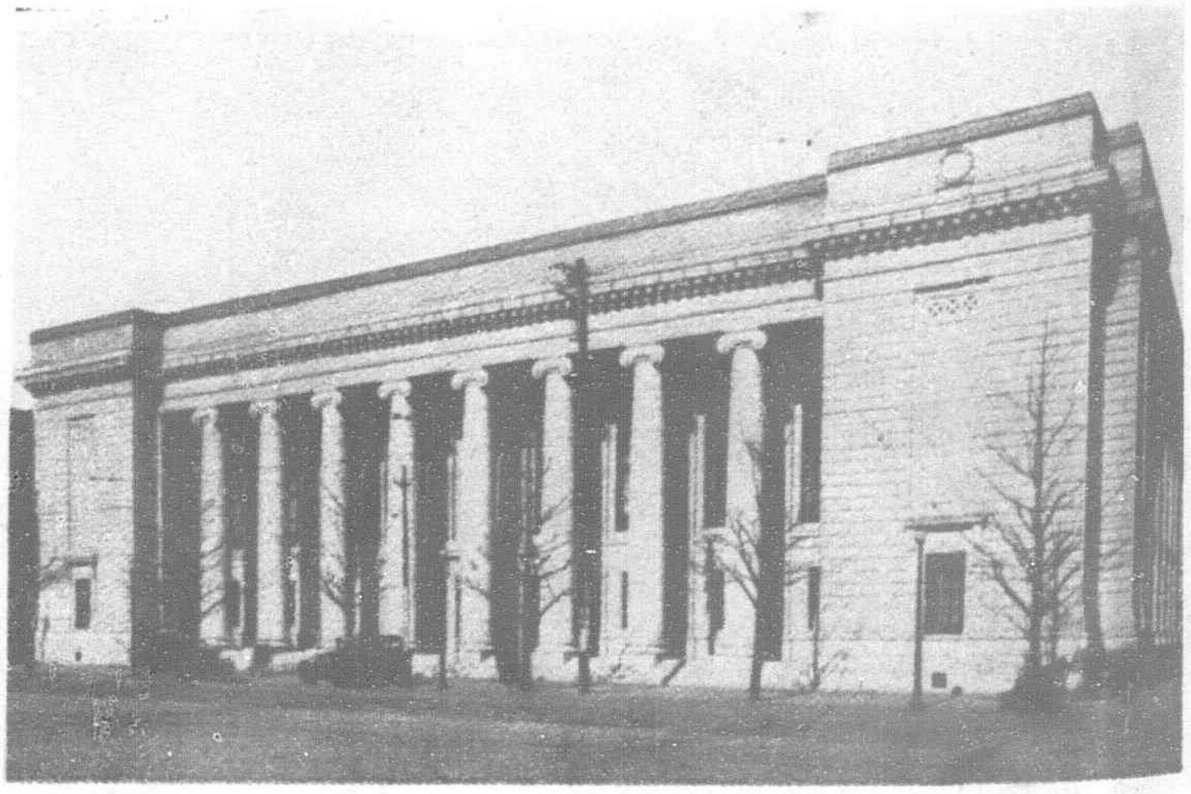
Beautiful Gardens of Umeyashiki or House of the Plum, Omori



Dojunkwai Apartments, Row of Modern Dwellings lining Boulevard at Onden, Aoyama District



Bank of Japan, completed in April this Year as First of Three New Units Planned at a cost of Y.19,000,000



The Mitsubishi Bank

The municipality now has 2,264 regular firemen, 7,359 aids and 230 fire engines capable of service. Prior to October 1 and the amalgamation of the metropolitan area, Tokyo had only 100 motor driven vehicles for fighting fires but the new wards have served to swell this number by 130, besides adding several hundred hand-operated machines to the total equipment. Definite plans have recently been drawn up for the organization of adequate fire-fighting units and establishment of more municipal fire stations in each of the new wards.

To help in preventing the spread of fires in Tokyo, wide avenues were laid out in many parts of the city soon after the earthquake in 1923. The widest of these is Showa boulevard, 144.5 feet (44 meters) in width and it extends for a length of 3.42 miles (5.5 kilometers) from Ueno Station in Asakusa to Shibaguch in Shimbashi near the elevated depot.

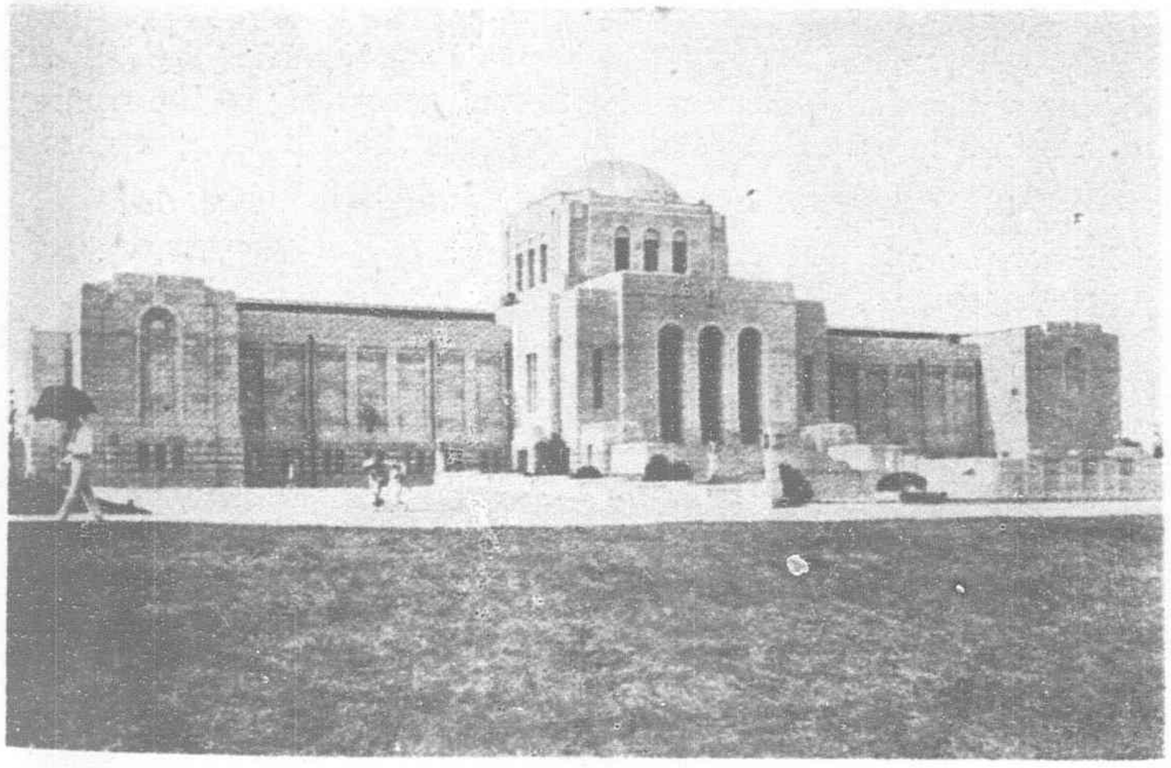
Compared with the heyday eras of olden Yedo, when the Metropolis of the West was called the city of 808 streets (happyakuhatcho), present-day Tokyo may boast of more than 2,200 streets, half of which number are to be found in the city's lately acquired territory.

Tokyo is planning to spend about Y.99,945,611 during the course of the next score years to improve the drainage systems in the 20 new wards. An appropriation of Y.151,036,280 for the entire city has already been declared. Of this amount Y.128,212,-982 is intended for the old city and Y.22,823,298 for the newly added districts. The total length of sewer pipes in the new wards is expected to reach approximately 2,388,000 feet, which will be one-third the length of the pipes in the old city area.

The municipality has already spent Y.3,400,000 for drainage needs in the new wards and has put down pipes to the extent of

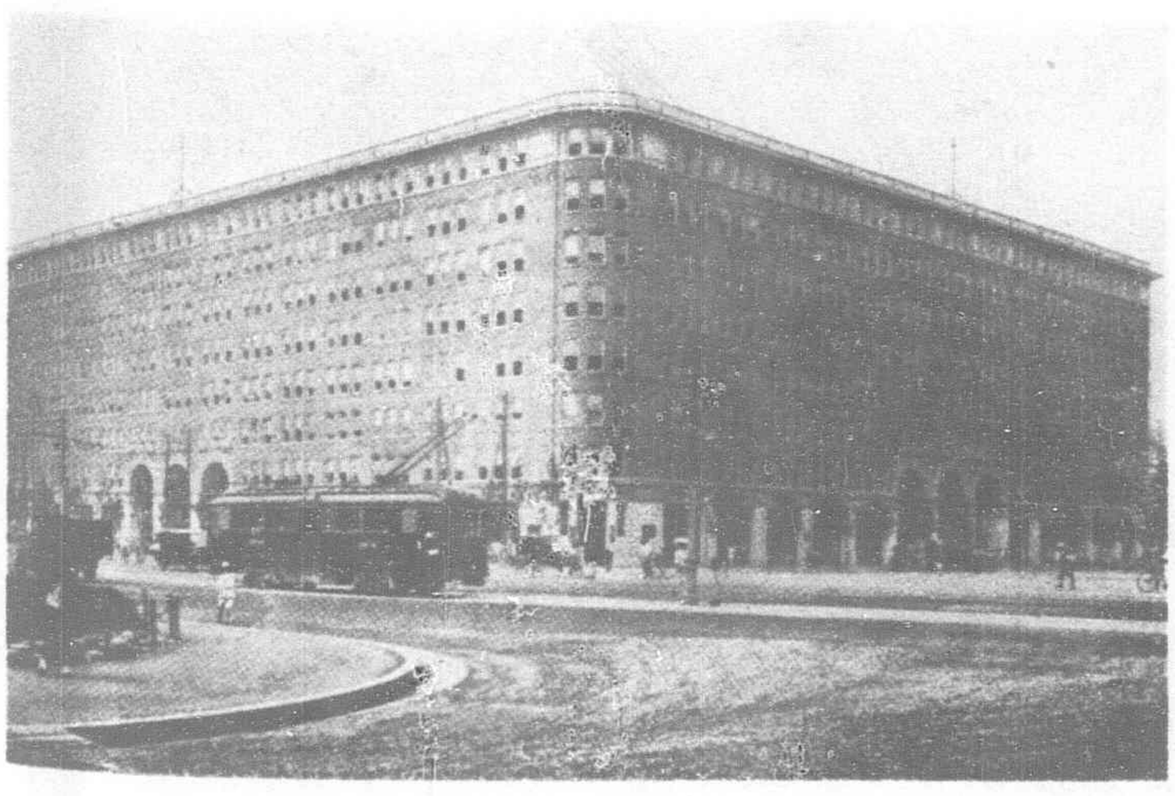
The Mitsui Bank

The Kaijo Building



The Meiji Picture Gallery

The Hypothec Bank



The Marunouchi Building

The Yusen Building

334,914 feet, which is about 15 per cent of the total length planned.

The list below gives the names of wards where sewer pipes have been laid to date and their approximate length :

Ward	*District*	
Shinagawa	Ohsaki..	133,380 feet
Adachi	Senju	113,118 ,,
Arakawa	Ogu	64,536 ,,
Oji	Oji	40,602 ,,
Toshima	Sugamo	21,000 ,,
Yodobashi	Okubo	16,416 ,,
Total	.. ..	389,052 ,,

Additions to and new sewage disposal plants to be built by the municipality, in keeping with plans for the future, are : Haneda (new), Kamata Ward ; Shakujii (new), Adachi Ward ; Mikawashima (addition), Arakawa Ward and Sunamachi (addition), Jyoto Ward. The population to be benefited in the area they will serve is estimated to be about three million or more than two-thirds that of the population of the present city of Tokyo.

Work of extending the sewerage system in the area covered by the former city has been under continual progress and, according to plans, work in the following wards is nearing completion : Kanda, Hongo, Shitaya, Asakusa, Nihombashi, Honjo, Fukagawa, Kyobashi, Shiba, Akasaka, Ushigome and Azabu. Pumping stations have for some time been operated in the wards of Kojimachi, Kanda, Asakusa, Honjo, Fukagawa and at Shibaura.

The Building Program

Since the catastrophic earthquake and ensuing fires in September, 1923, the Imperial Government has launched a building program which has resulted in a succession of varied public structures to be put up within the metropolitan area of Tokyo—principally in the city itself. During 1924 these buildings consisted in most part of so-called barracks intended for a comparatively temporary use only.

On Kasumigaseki Hill overlooking the palace grounds, the new Imperial Diet building, most imposing edifice of modern Tokyo, was begun some dozen years ago and is approaching completion, which is set for early in 1936. Designed to accommodate the House of Peers and the House of Representatives of the Japanese Parliament, the structure covers a floor area of 568,080 square feet, the white peak of its tower rises from the foundation to a height of 215 feet; 8 inches, and the final cost is expected to reach approximately Y.30,000,000.

With a total of 390 rooms comprising the edifice, the auditorium of the upper house seats 460 members and that of the lower house 466 representatives. There are 770 seats for spectators in the upper house and 922 in the lower.

It is interesting to note that, except for locks and pneumatic devices, all the material used for this new government structure is of native Japanese origin. From Kurokami Island in Yamaguchi Prefecture comes the soft gray granite which went to build the foundation. Hard white granite which faces the main body of the building, constructed of ferro-concrete, came from Kurahashi Island, Hiroshima Prefecture, and the beautiful grained marble quarried in Yamaguchi, Tokushima and Okinawa Prefectures is used to advantage elsewhere in the long reaches of the building. The structural steel was brought from the smeltering center of northern Kyushu.

Many of the interior columns are being decorated by some of the most skilled lacquer artisans of the Empire, and a specially designated room for the Emperor is provided with a lacquered benden or elevated seat for His Majesty. It will be adorned according to the style of the Momoyama period, developed in the time of the renowned Japanese warrior-ruler, Hideyoshi Toyotomi, who lived about 350 years ago.

During the eight years between 1924 and 1931, inclusive, the government built structures including offices for the departments of Finance, Home Affairs, Agriculture and Commerce, Education, Communications, Foreign Affairs, Civil Engineering and Auditing. Besides these there are the Tokyo Metropolitan Police Board headquarters, quarters for the Cabinet, customs houses, printing plant, Naval Supply Factory, Mining Supply Depot, Naval Medical School, Silk Conditioning House, fish depots and the courts.

Below is a list giving the number and cost of governmental structures put up during these eight years, except 1925 and 1927 :

Year	*Number*	*Cost*
1924	19	Y. 7,291,161.93
1926	1	83,083.56
1928	8	1,318,446.61
1929	13	5,298,382.97
1930	6	12,542,373.31
1931	2	8,950,000.00
	49	Y.35,483,448.38

Building Since Earthquake

The Tokyo Municipality has conducted a building program from January, 1924, until the present time as follows :

Year	*Number*		*Cost*
1924	2		Y. 536,281.00
1925	5		966,664.56
1926	17		3,445,009.10
1927	42		11,406,863.78
1927-28	2		1,890,831.00
1928	34		10,261,771.98
1928-29	3		458,736.00
1929	60		16,410,130.68
1930	36		6,596,045.77
1931	21		3,813,665.61
1932	1	(Tsukiji Market under construction)	3,648,775.00
	223	Total	Y.59,434,774.48

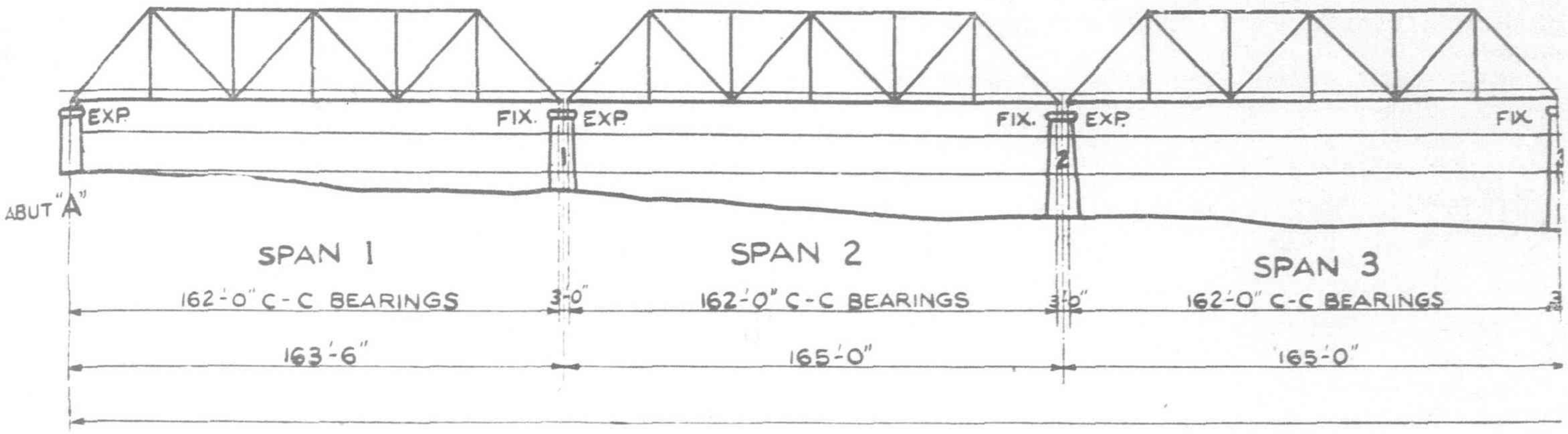
The above 223 buildings distributed according to the number, kind and total cost of the structures gives the following results :

Classification	*Number*	*Total Cost*
Primary schools..	117	Y.40,977,621.00
Hospitals	7	2,304,175.00
Employment agencies	13	449,999.00
Public nurseries	14	1,027,055.00
Maternity hospitals	6	557,125.00
Boarding houses	10	500,550.00
Public lodgings	10	1,470,912.50
Pawnshops	7	162,025.94
Public baths	2	258,469.50
Markets	3	5,539,606.00
Waste disposal works	2	1,232,092.55
,, assembling plants	25	619,670.99
Libraries	3	458,736.00
Ward offices	4	3,856,736.00
	223	
Grand Total		Y.59,434,774.48

Mayor Hidejiro Nagata of the city of Tokyo, in addressing a gathering of his staff on the morning of October 1 last, was quoted by *The Japan Advertiser* as saying :

" Our Tokyo has become the second largest city in the world, a matter for congratulation. The increased area and population of the city alone are not in themselves the reason for our celebration but the fact that the areas taken in give an entirely new aspect to our city. We must not forget to make this new metropolitan center one which will set an example to the rest of the country and to the world, in character, public utilities and beauty. We must also realize by whose grace it has been possible to create this new city.

" A new era starts to-day for Tokyo, as the seat of the central government of the Empire, and we must always remember what we owe to the Great Meiji Emperor."



Plan of First Three Spans of the Sunning Railway Bridge

Sunning Railway Bridge at Kung Yik, Kwangtung

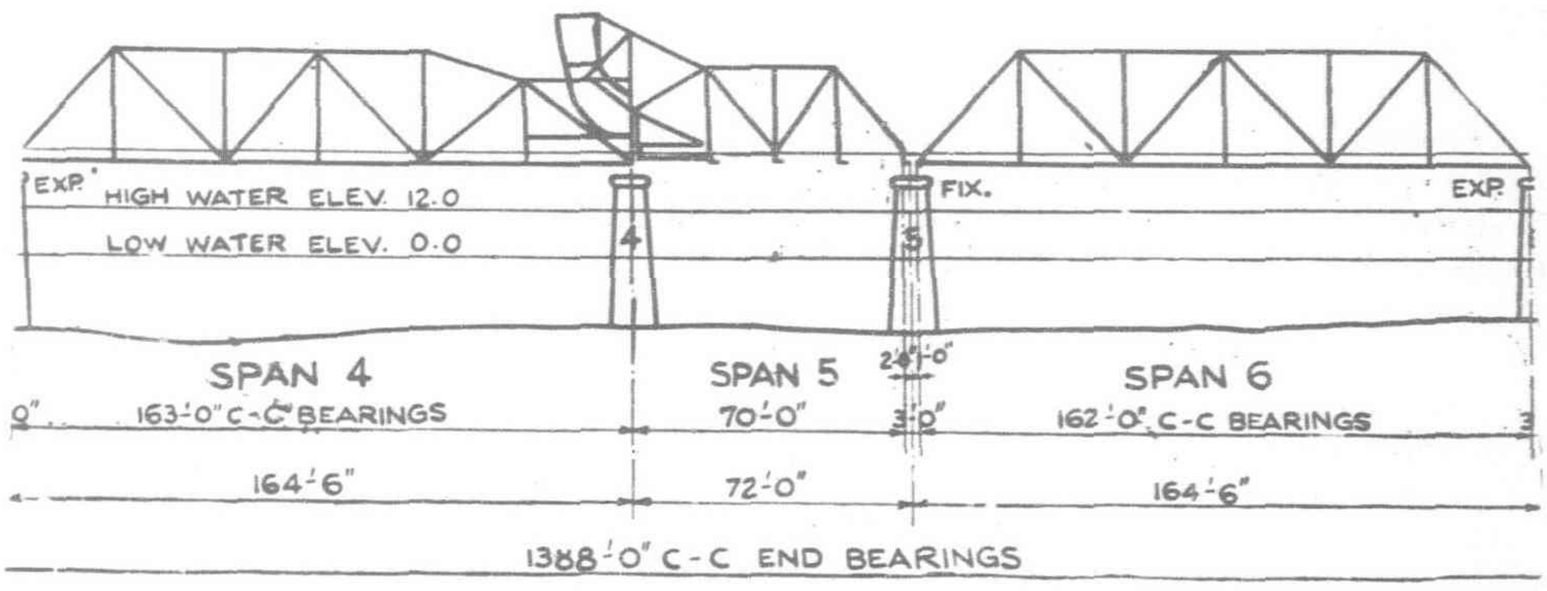
A BRIDGE for the Sunning Railway is now being built by Messrs. McDonnell & Gorman, Inc., to replace the antiquated car ferry service across the Tam River, which, while serving its purpose admirably in the past, now seriously impairs train service, and is proving an obstacle to much needed line changes and grade elimination schemes.

The present ferry consists of a flat barge capable of taking eight cars and a locomotive with tender, and is operated by four steam winches which pull the entire equipment across the river by means of steel cables. Each trip takes, on the average, about half an hour.

The Sunning Railway serves the four fertile and prosperous districts of Hoi Ping, Sun Wui, Toishan and Hok Shan in Kwangtung Province and is unique in that it has been financed, built and operated entirely by the Chinese. At one time the area traversed by the railway was infested with bandits and pirates and one could hear sporadic rifle or pistol firing at almost any time during the night, even in the populated centers. At present, things are getting into better control and it seems at last that these troubles are gradually subsiding.

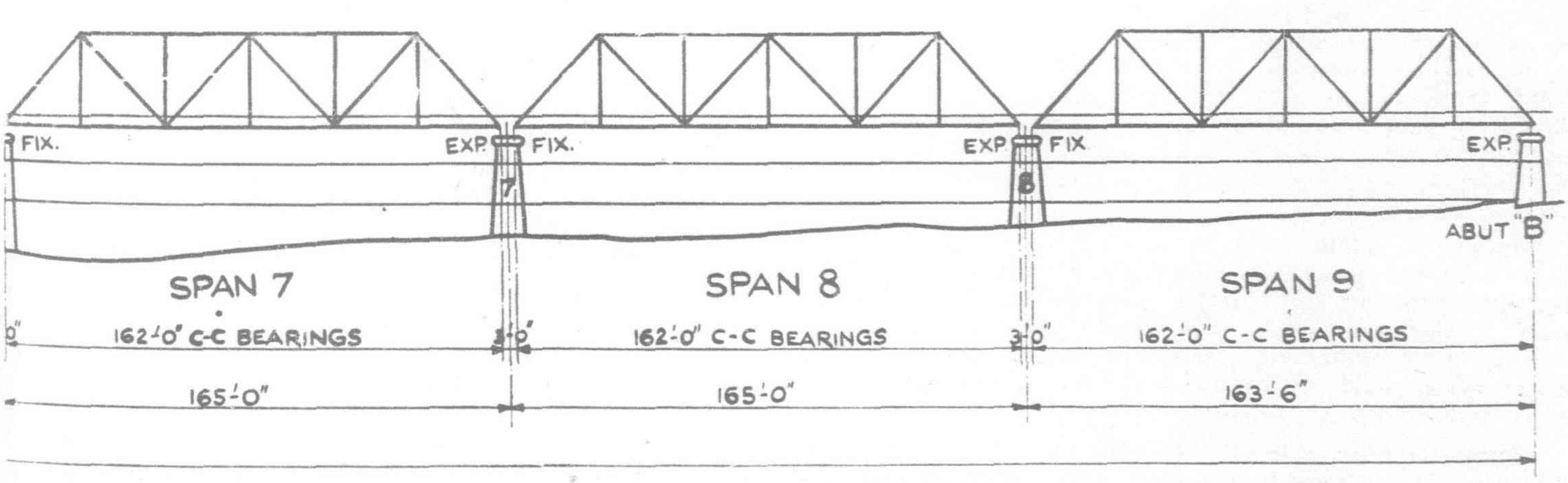
The railway authorities, realizing the inconvenience of the car transfer, and with the idea of competing successfully with river transportation with its low freight rates, have decided to re-locate a considerable part of their line and make several necessary improvements to serve the general public. Construction of the new Tam River bridge constitutes one of the major items in the general scheme of improvement.

The bridge is located at Kung Yik, fifty miles from the steamer terminal at Pak Kai and four miles upstream from the present ferry crossing. The Sunning Railway main line extends from Pak Kai to Toi Shan, a distance of about seventy miles, traversing towns and cities thickly populated and both the passenger and freight traffic are comparatively heavy. On completion of the bridge now under construction, together with other necessary line changes, and grade and curvature eliminations, there is a prospect of the future extension of the line with Macao, the well-known sea port, as its terminus.



Plan of Central Spans of Sunning Railway Bridge showing Bascule Span

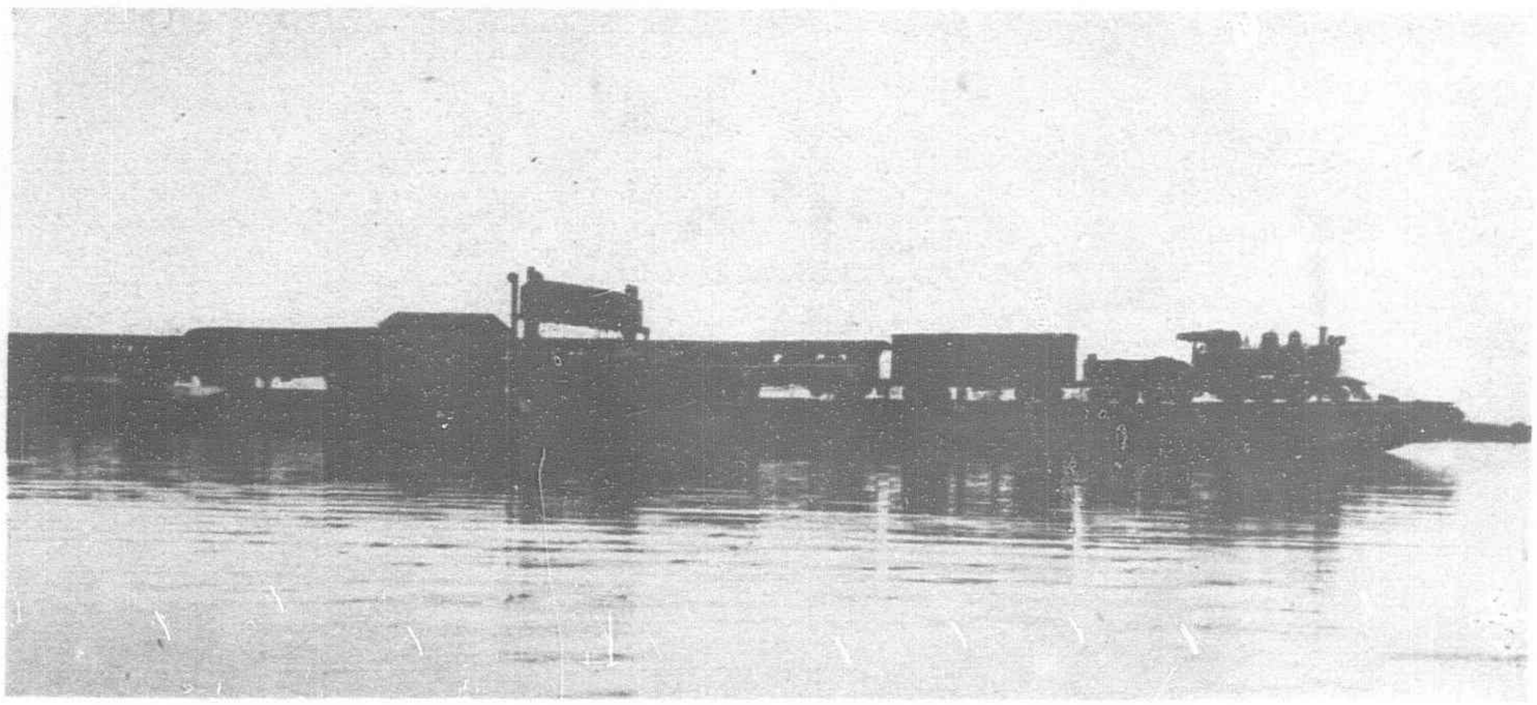
The new Tam River bridge will be fourteen hundred feet long between abutments and consists of seven fixed spans of one hundred and sixty-two feet, one fixed span of one hundred and sixty-three feet, a bascule span of seventy feet and an approach span of sixteen feet. The steel spans will be of the through rivetted Warren type designed for a loading of Cooper's E 35. The width of the bridge is to be about thirty-one feet overall, and it will carry a single track of standard gauge, flanked by five foot sidewalks supported on cantilever brackets on each side. The roadway portion of the bridge, about fifteen feet wide between curbs, will be so paved as to permit



Plan of Last Three Spans of Sunning Railway Bridge

a single lane of highway traffic when trains are not passing.

All the spans are to be of structural steel; the approach span to be provided with concrete stairs leading from the bunding to the bridge floor sidewalks. The steel work is being furnished by the American Bridge Company of New York and the Scherzer Rolling Lift Bridge Company of Chicago. The opening and closing of the bascule will be electrically controlled and will be operated from a signal house on the bridge. Manual power will also be provided in case of power house breakdown resulting in temporary suspension of electric current supply.



Showing Car Ferry at present in Service to be replaced by Sunning Railway Bridge

Abutments and piers, varying in height from twenty-three to fifty feet, are being constructed of reinforced concrete and designed for Cooper's E 50 loading with the object that the superstructure may be renewed at some future date as heavier loading and denser traffic should demand, without the renewal of substructures. Piers and abutments are being founded on rock or such strata as is considered satisfactory to give the requisite bearing.

Substructure construction is being carried out by the cofferdam process. Steel sheet piles, forty-five to sixty-five feet in length, are driven around the pier sites, driving equipment for this work consisting of McKiernan Terry 9B and Vulcan steam hammers. Where conditions permit, cofferdams are unwatered, and excavation made in the dry until the required stratum is reached at a datum previously determined from borings. Steel sheet piling is pulled, when a cofferdam is no longer required, by means of a Demag-Union pile drawer capable of exerting a tensile force of twenty tons.

In case an exceptionally porous strata renders cofferdam de-watering difficult and costly, excavation is first made by a bucket dredge, using Diesel engine power. Cofferdams are then tremie sealed, de-watered, and pier shafts carried up in the dry. Pumping equipment consists of Duplex and centrifugal pumps, varying is size from four up to eight inches.

The steel truss spans are being first erected on falsework parallel to the South shore of the river, an erection traveller being used for this work. All field rivetting is done with the trusses in this position, pneumatic tools being used. When the piers are ready to receive them, the steel spans are raised from the falsework by means of two lighters fitted with special floating equipment, utilizing the tidal range for this purpose. They are then floated to their position on the piers.

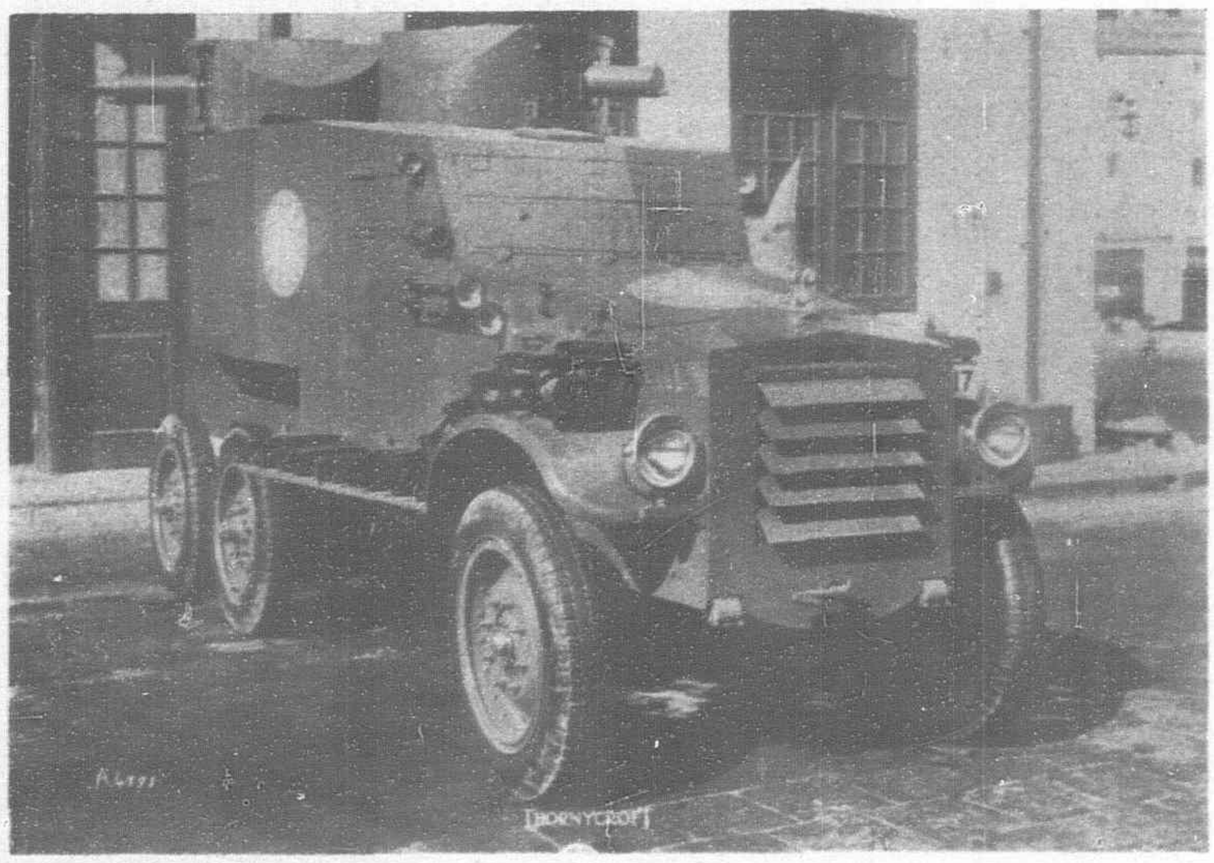
The bascule span will be erected in its open position and the concrete counterweight poured simultaneously to keep the finished portion of the structure in balance. After the installation of the operating equipment, the bascule span will be delicately balanced by counterweight adjustment and will then be ready for service.

As originally planned, the entire bridge deck was to be of hardwood timber, but it has since been decided to use a reinforced concrete deck to give a better roadway, with cheaper maintenance, as well as longer durability.

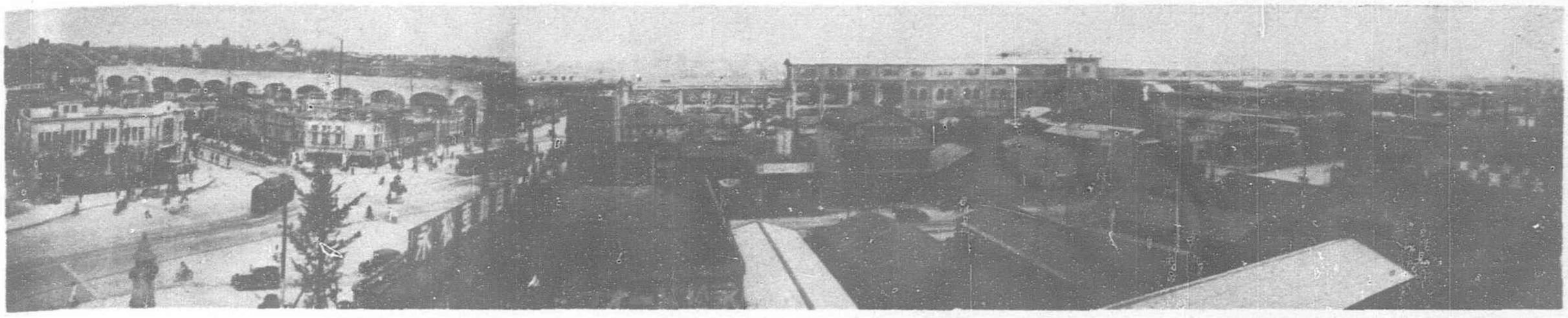
The ordinary tidal range of the Tam River is about six feet, while the maximum difference between high and low water is about ten and a half feet. The current of the river with wind blowing in the same direction is about five knots per hour, which at times makes the substructure construction rather difficult.

Notwithstanding these difficulties the contractors, McDonnell & Gorman, Inc., are making good progress with the job, which is under the direction of their Resident Engineer, Mr. George C. Brimble. The contract price of the entire structure amounts to about one million and fifty thousand Hongkong dollars, and unless the work is stopped or delayed by unexpected developments beyond the control of the contractors, the bridge will be completed next autumn.

Armored Cars for South China



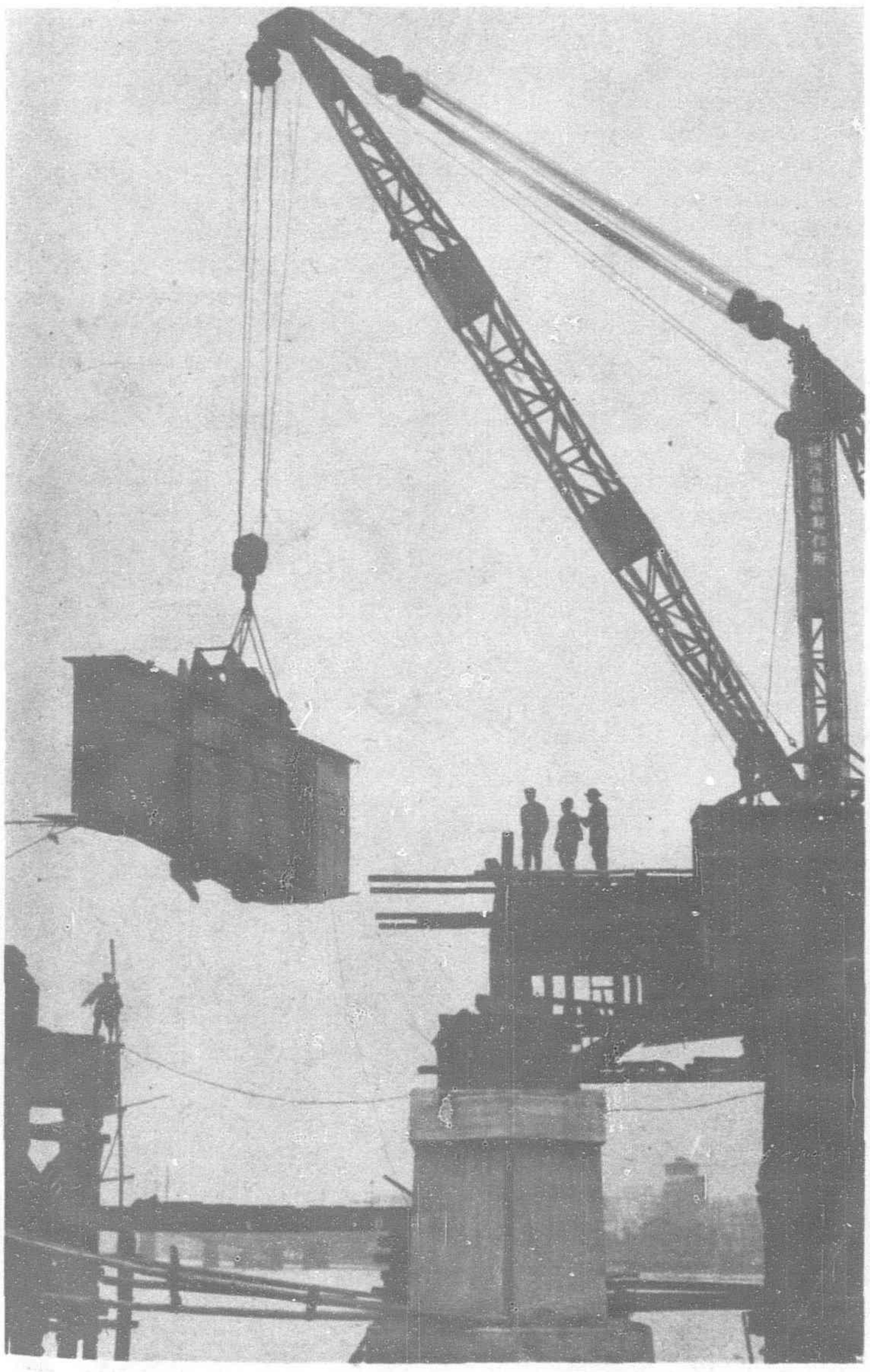
At the left is shown an armored car recently supplied by Messrs. John I. Thornycroft and Company, Ltd., to the Government authorities at Canton. It is on a Thornycroft type "A3" 3-ton six-wheeled chassis and is part of an order for eight similar vehicles. The picture on the right shows a new type police riot car supplied by Messrs. John I. Thornycroft and Company to the Hongkong Police force.



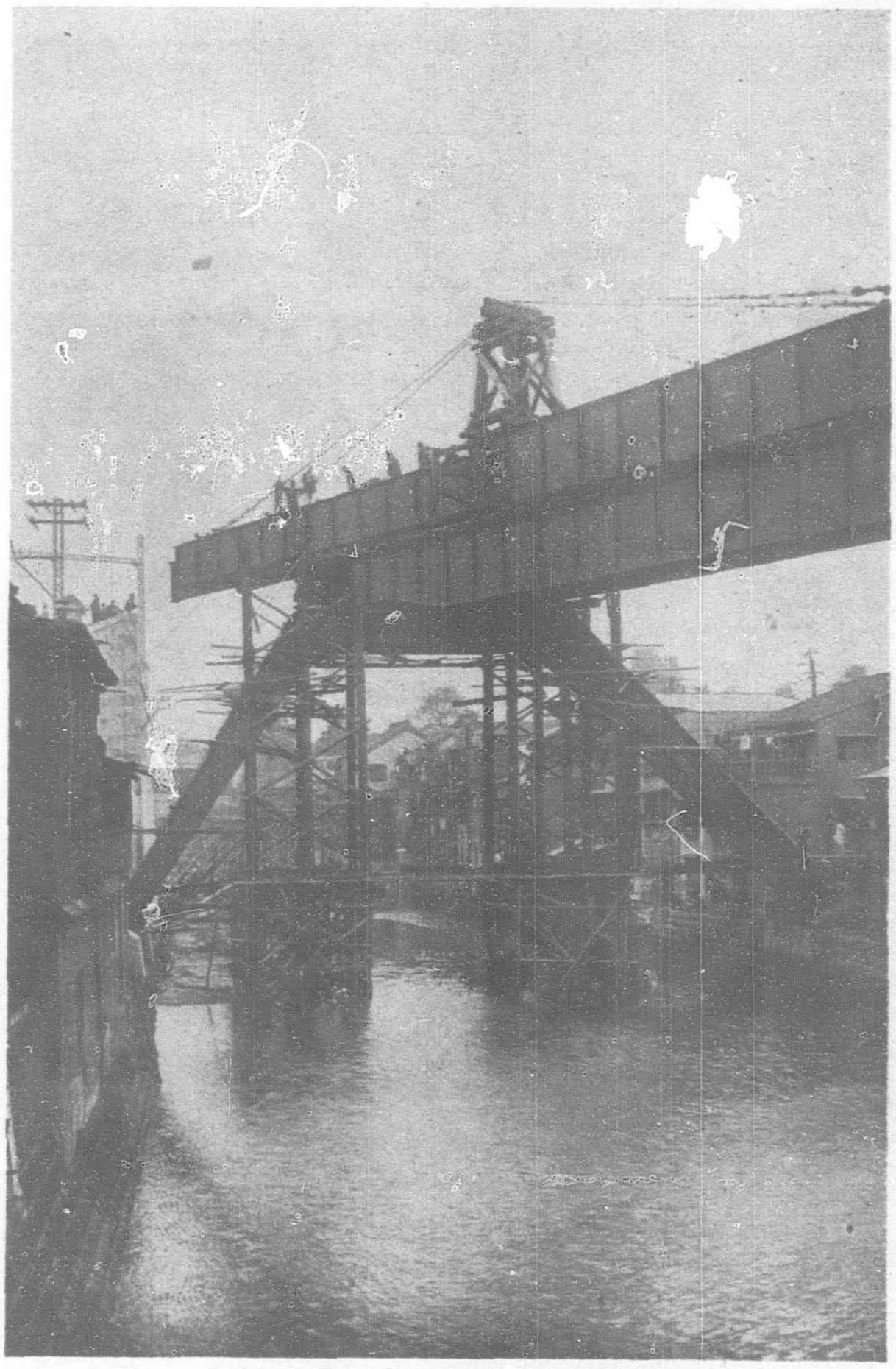
Panoramic view of Elevated Line between Ochanimizu and Akihabara Stations from Yanagiwara

Construction of the Elevated Line Between Ochanomizu and Ryogoku

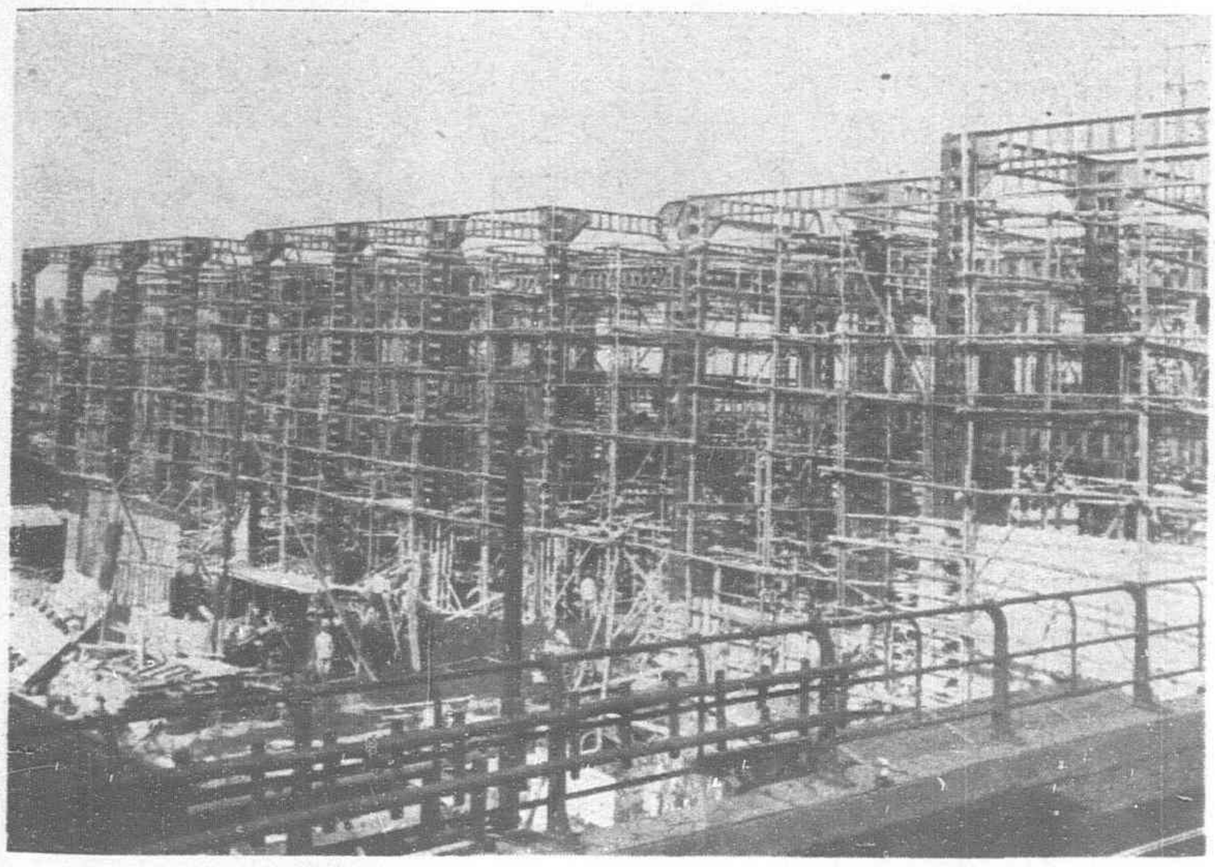
THE construction of the new elevated line between Ochanomizu and Ryogoku had been in contemplation for many years, but it was not realized, owing to lack of opportunity or other reasons. The great earthquake in the Tokyo district in 1923, however, brought the chance at last, and it was decided to include the construction of this line in the reconstruction programme of the Department of Railways. Land required for the new line was purchased through the Reconstruction Bureau, in connection with the ordination work of the burnt land. In 1930, a decision was made that the construction work should be completed in 1931, and the design of the Sumida Bridge was started in April of the same year, followed by other designs of the whole section. Unfortunately, the offices concerned were destroyed by a fire, which occurred on December 27 of the same year, and the



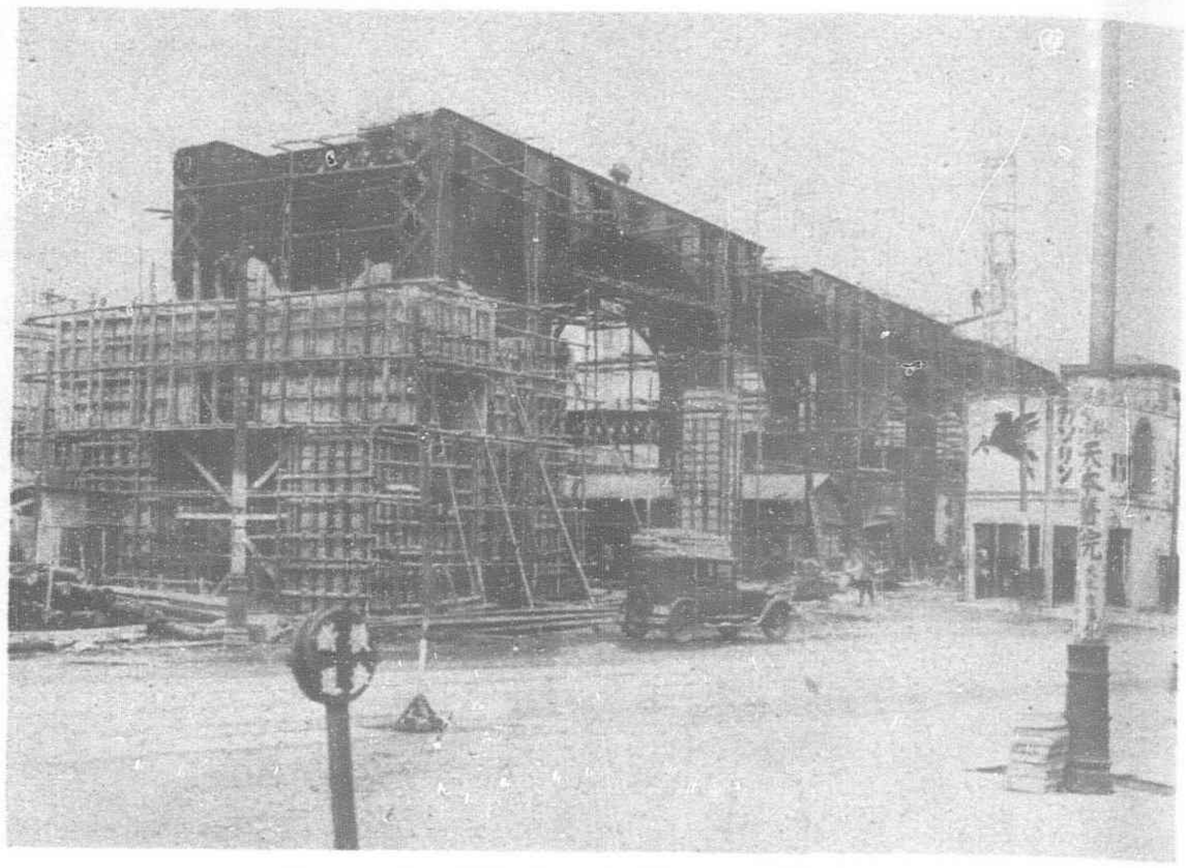
Laying the Side Span of Sumidagawa-bashi



Erection of Kandagawa-bashi



Erection of Steel Frames of Akihabara 3-Storied Station



Concrete Work of Hatagocho-bashi

papers and drawings embodying the design went up in smoke. This was a severe set-back in design. But, thanks to the strenuous efforts of the officers concerned, actual construction work of the Sumida Bridge was commenced in February, 1931, and the construction of all the other sections of the system successively was then begun. By dint of the earnest efforts exercised on the work, the elevated construction of 2.7 km. in length was completed in the short time of 17 months. This new line not only connected Ochanomizu and Ryogoku, but also effected a complete transformation in transportation between the Boso district and the city of Tokyo.

The Line

The present elevated line has a length of 2,668.9 ms. between Ochanomizu and Ryogoku and the kilometrages between stations are as follows :—

Ochanomizu Station—Akihabara Station	..	768.6 ms.
Akihabara Station—Asakusabashi Station	..	1,071.4 ,,
Asakusabashi Station—Ryogoku Station	..	828.9 ,,

The line, starting from Ochanomizu, turns to the left with the intersection angle of 15° 59-ft. at the east end of this station and crosses over the electric up-lines for Tokyo station, then runs straight to the west side of the Sumida river, after crossing over the Tohoku main lines and Akihabara freight lines at Akihabara station. Near the west side of the Sumida, it turns to the right with the intersection angle of 18° 40-ft 40-in. and crosses over the river, and then runs into the station precincts of Ryogoku with the intersection angle of 19° 19-ft. to the left.

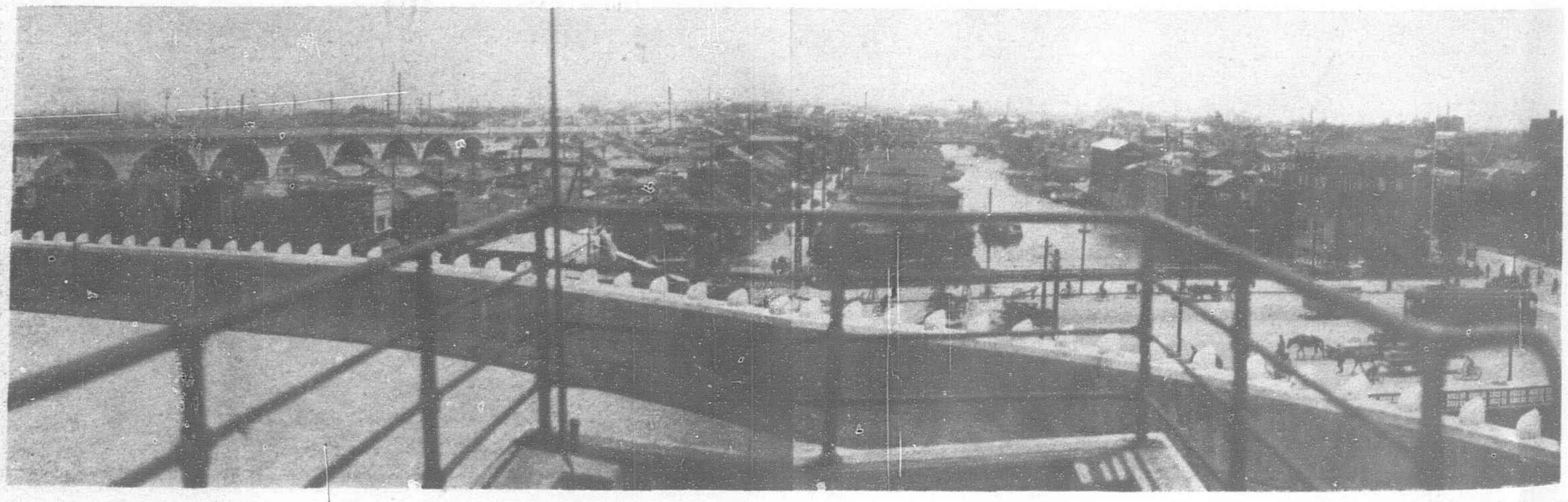
In principle, the grade of this line is less than 10 in 1,000 on ordinary parts ; but at the east end of Ochanomizu station and at Akihabara station, however, the grades are 33 and 25 in 1,000, respectively, because of the fact that this elevated line was constructed in conformity with the natural ground, keeping clear head way of 4.5 meters above road surfaces, and at the same time it must cross over the existing elevated railway lines.

Land Required for Construction

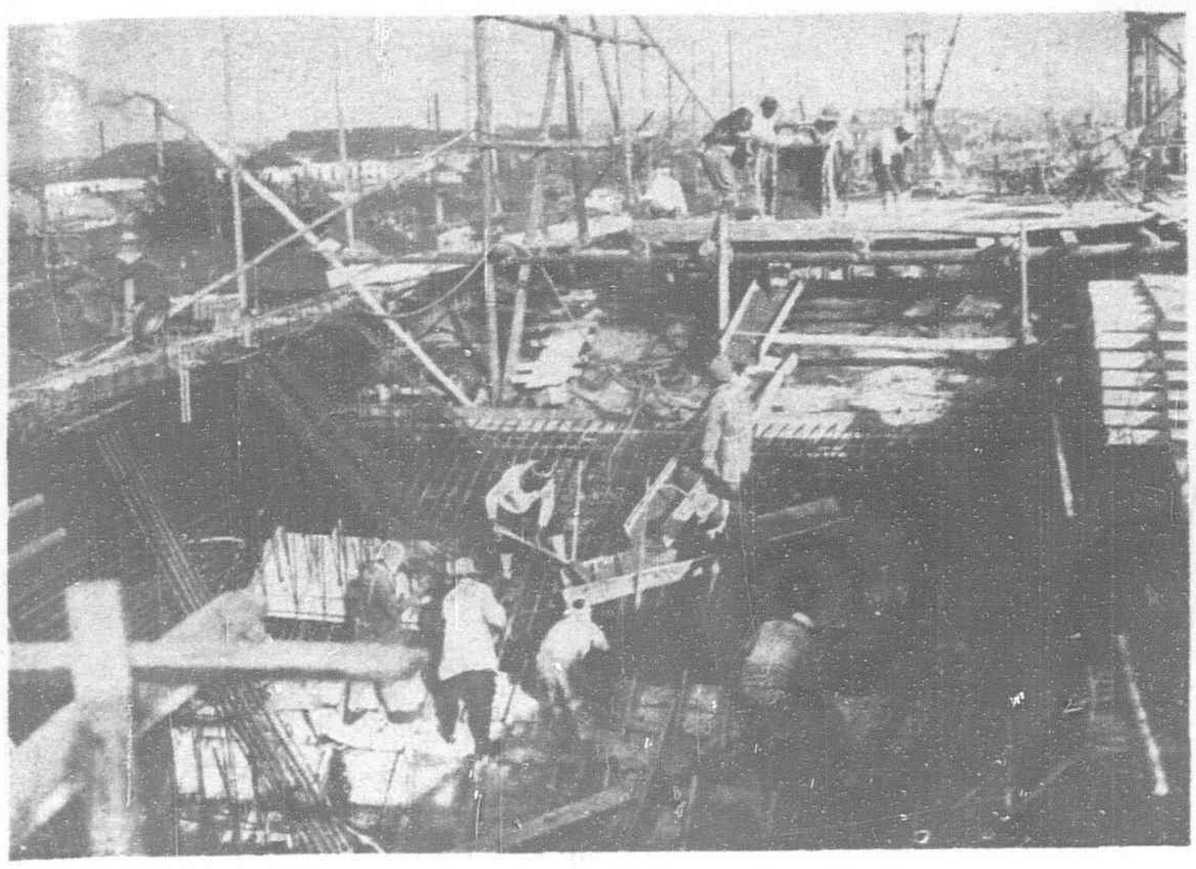
Land with a width of 17.73 ms. was purchased for this work of the elevated line, and tracks were built in a width of 8.4 ms. in the middle of this width by the Department of Railways. Road with a width of 8 ms. were built on the remaining 4.665 ms. at each side of the track, two additional strips of land, each 3.335 ms. wide, being purchased by the Reconstruction Bureau.

As it was considered to be convenient to get the required land by exchange of land in connection with the land-ordination work, the Department of Railways entrusted to the Reconstruction Bureau to buy the land for exchange, and most of which was bought by the Bureau with harmonious agreement of the owners. Owing to circumstances, some parts of the land were purchased directly by the department, such as the land required for enlarging Ryogoku station, Fukuicho, Saemoncho in Asakusa-ku, and Nakacho in Kandaku, etc. Expropriation law was applied in more than ten cases, and in one of them a dispute is now going on with regard to the amount of compensation.

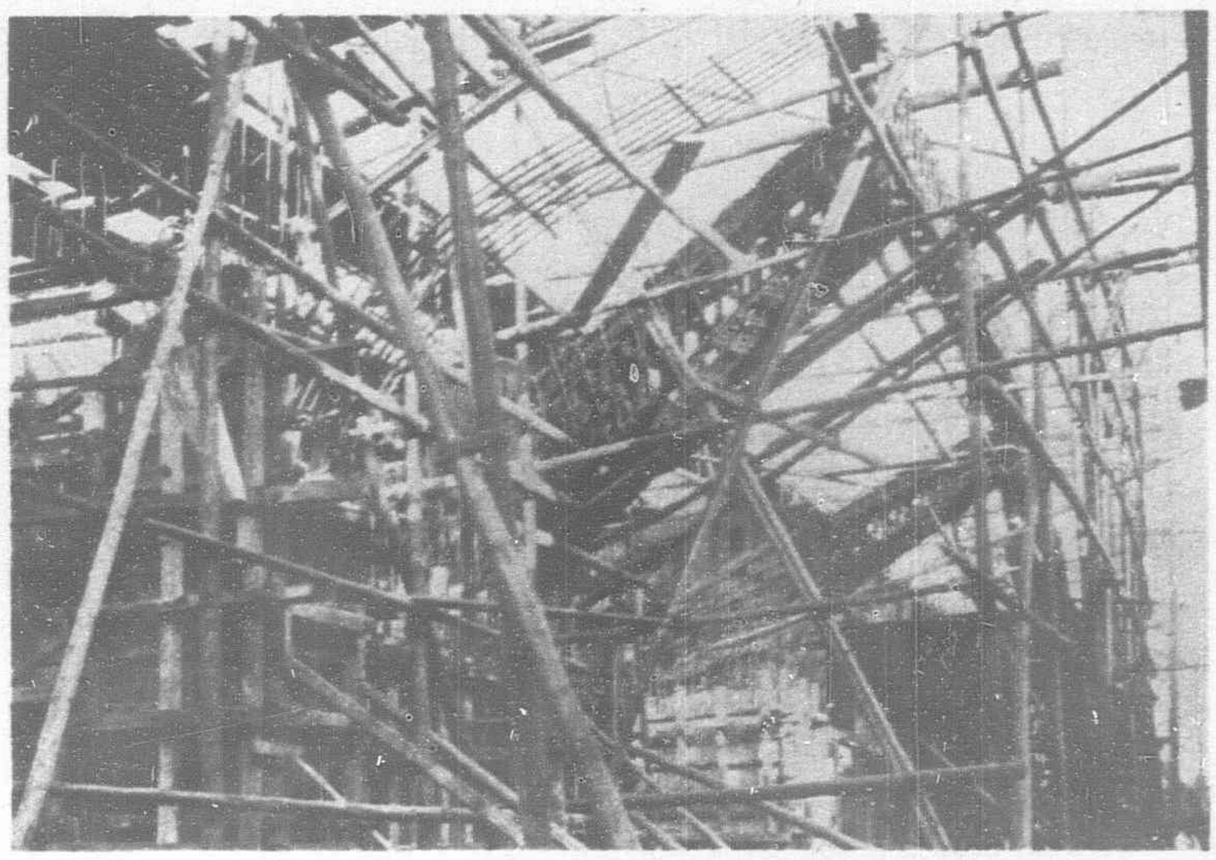
Not having been burnt by the ensuing fire caused by the earthquake, nor included in the land ordination work, Sakumacho and Hirakawacho in Kanda-ku were purchased directly by the department. Purchase of land was commenced in June, 1924, and completed in May, 1930. After that, however, the amount of land required for Ochanomizu station had to be so increased that purchase was begun in December, 1930, and lasted till August, 1931. The total land purchased for this elevated line was 45,897 square ms. and the land exchanged for the state land amounted to 3,783.3 square ms.



Panoramic View of Elevated Line between



Concrete Work of Sakumacho Arch



Erection of Steel Frames of Asakusabashi Station

General Description of Works

The construction work was divided into the following seven sections :

OCHANOMIZU SECTION—The Ochanomizu station precincts (from the point 2.85 kms. from Tokyo station on the Chuo (central) line to the south bank of the Kanda river)

MANSEIBASHI SECTION—From Kanda-bashi to Onarikaido-bashi. The above-mentioned were constructed by the Second Tokyo District Improvement Office.

THE FIFTH SECTION—From the east side abutment of Onarikaido-bashi to the west side abutment of Showa-bashi.

THE FOURTH SECTION—From Showa-bashi to Mikura-bashi.

THE THIRD SECTION—From the east side abutment of Mikura-bashi to the west bank of the Sumida.

THE SECOND SECTION—Sumida-bashi.

THE FIRST SECTION—From the east bank of the Sumida to 2 chome, Midoricho.

The above mentioned were constructed by the First Tokyo District Improvement Office.

Ochanomizu Section

The length of this work section is 682 ms., and one side of the line faces the Kanda river and the other is parallel to a cliff of more than 10 ms. high. A part of the land required for the work on the cliff side was purchased from the private owners, and the charge of the land on the river side was transferred to the Department from the State. The land was very narrow and located half-way down the cliff, and moreover the electric cars on the Chuo line were operated at 4-minute intervals—operation being almost continuous in rush hours. Under these circumstances, the construction of the two tracks and two platforms required the operating railway lines to be changed several times. Especial difficulty was encountered in the construction of concrete retaining walls of 12 ms. high near the houses on the cliff. The ground was so narrow that a foundation trench 12 ms. deep was vertically dug, and the trench walls were propped against each other with many struts, which were not removed, but buried in the concrete for the safety of the houses. Piling was not needed for the foundation of the retaining wall on the cliff side, but pine piles of 4.5 to 10 ms. were driven into the ground on the river side.

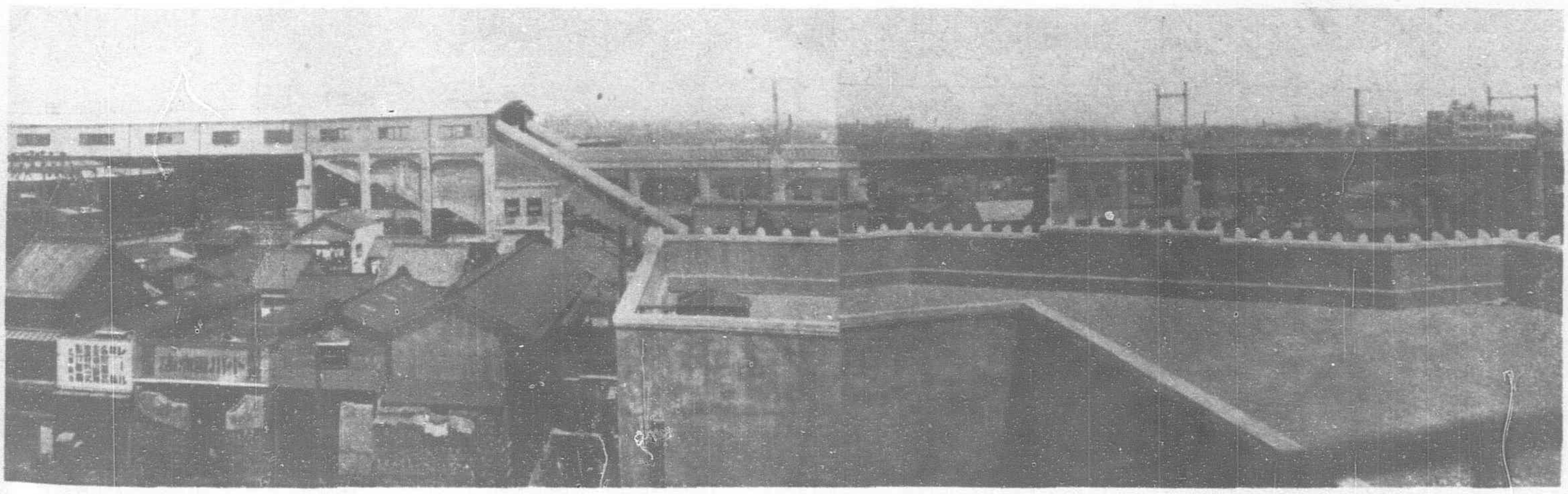
Manseibashi Section

This section extends from the Kanda river to Onarikaido, crossing over the Matsuzumicho junction of the municipal tramways in an oblique direction, with a length of 325 ms. The ground being soft, 989 foundation piles of precast reinforced concrete of 33 cm. in diameter and 6 to 10.5 ms. in length were required.

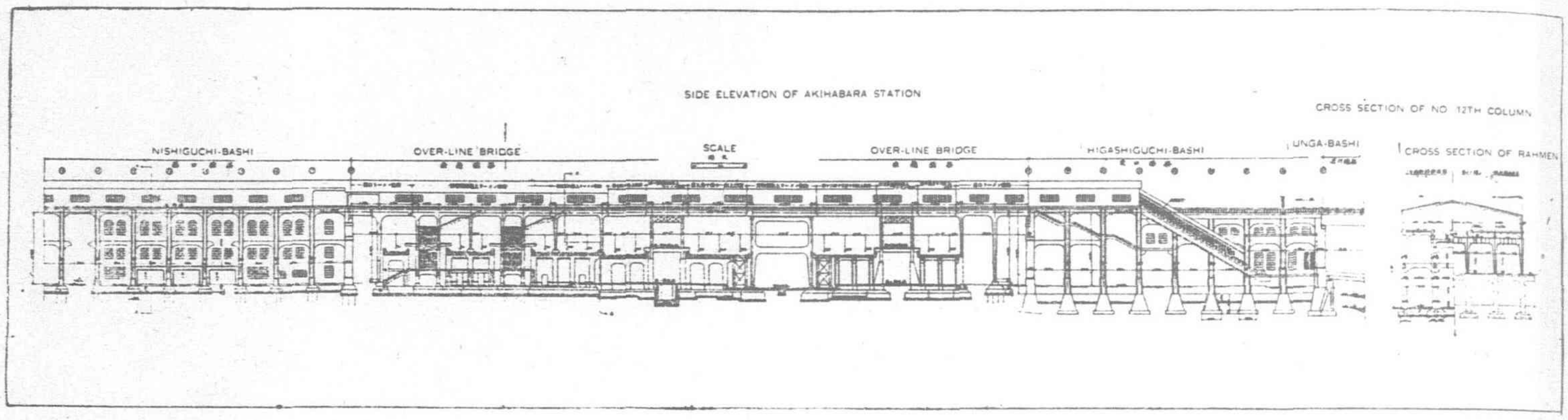
Since the height of the construction amounted to 13 ms. above the ground level in spite of the weakness of the ground, for the superstructure of this section there was selected a construction of light weight and sinking allowance. A series of simple span viaducts (center to center of columns 12.3 ms.) of steel frames were encased in reinforced concrete, and connected with one another with simple girder spans of 4.5 ms.

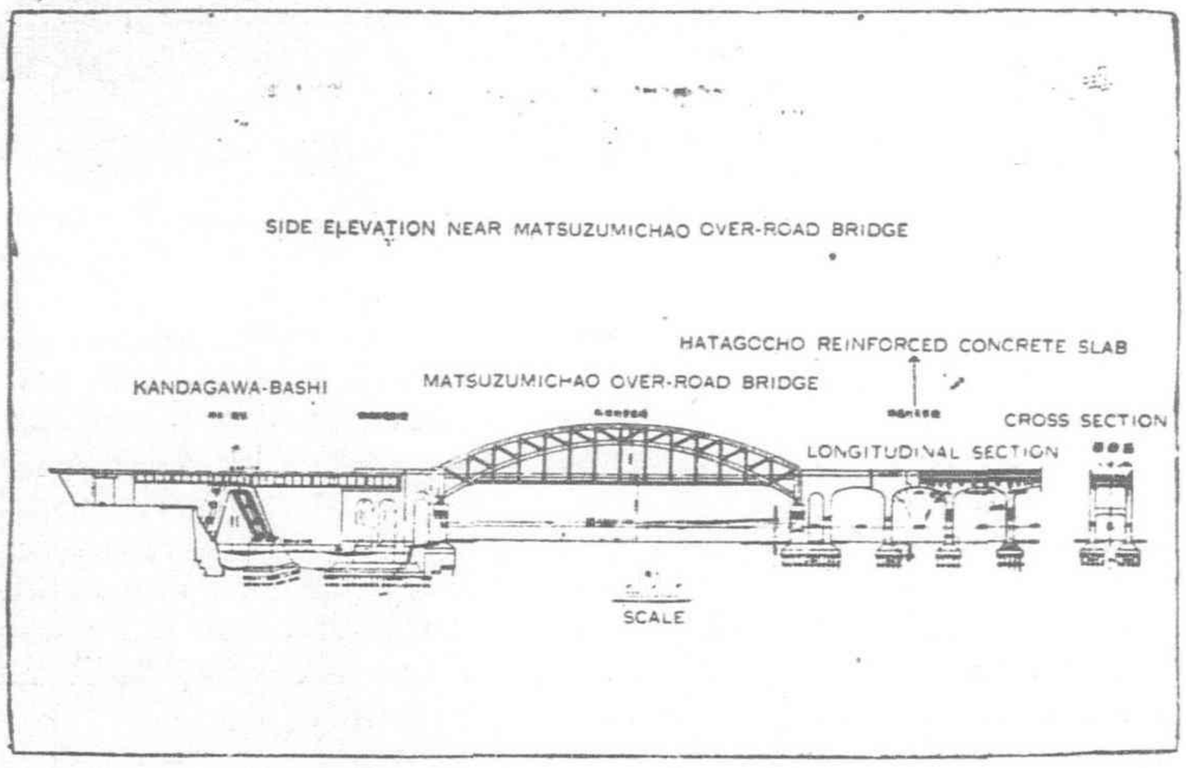
The Fifth Section

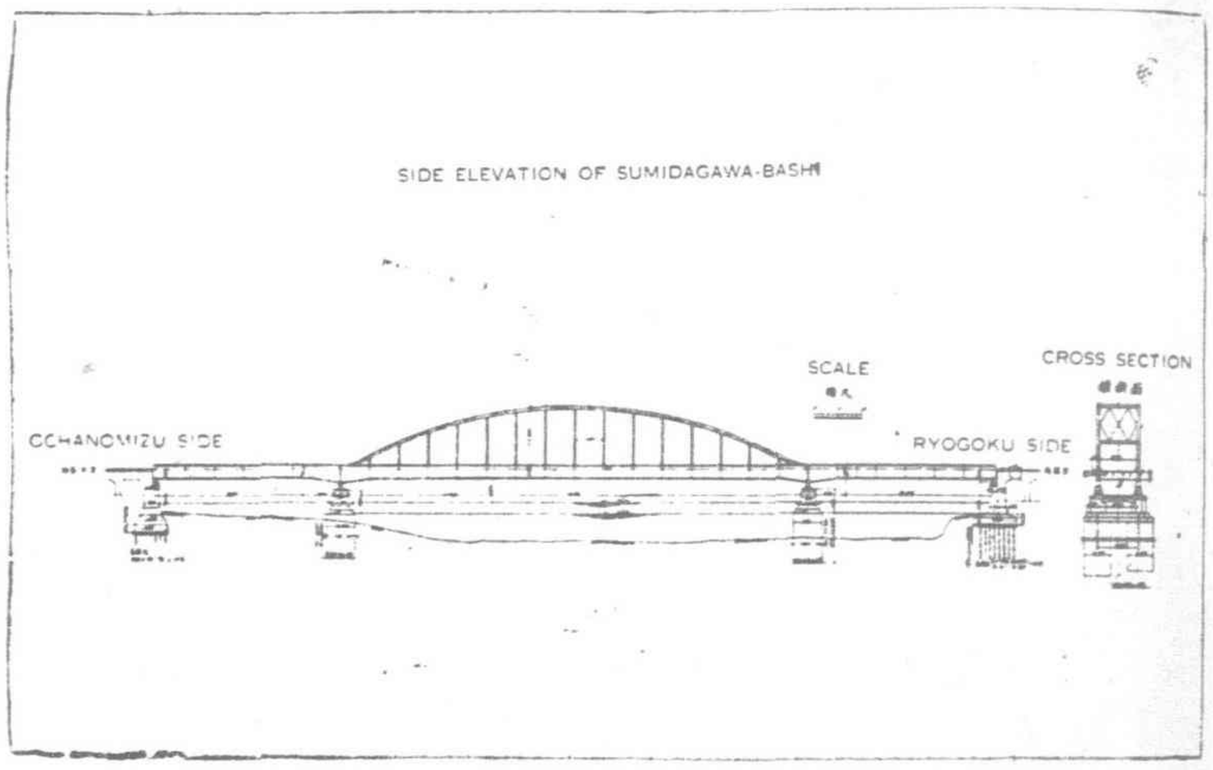
Though the length of this section is only 345 ms., it includes the highest part of this elevated line to cross over the existing elevated system in the Akihabara station precincts, and the height of the surface of the rail is more than 14 ms. from the ground level. Nishiguchi-bashi (Westside bridge) consists of 3-span



Akihabara and Ryogoku Stations







continuous steel viaducts encased in reinforced concrete (center to center of columns 7 ms.), and Norikoe-bashi (over-line bridge) is a steel girder bridge over the electric railway lines between Tokyo and Ueno stations, their connecting platforms, the freight lines and the loading and unloading place of freight. The bridge has a length of 131 ms. and is constituted of seven rahmen-bridges and five simple girders to connect them. In designing these viaducts, the height had to be kept as low as possible, as it occupies the highest part of the line. On the other hand, through this construction a fixed clear headway was required to be kept, so as to cross over the existing Akihabara precincts. To meet the two contradictory requirements, the track bed was made of concrete and its thickness was reduced as far as possible.

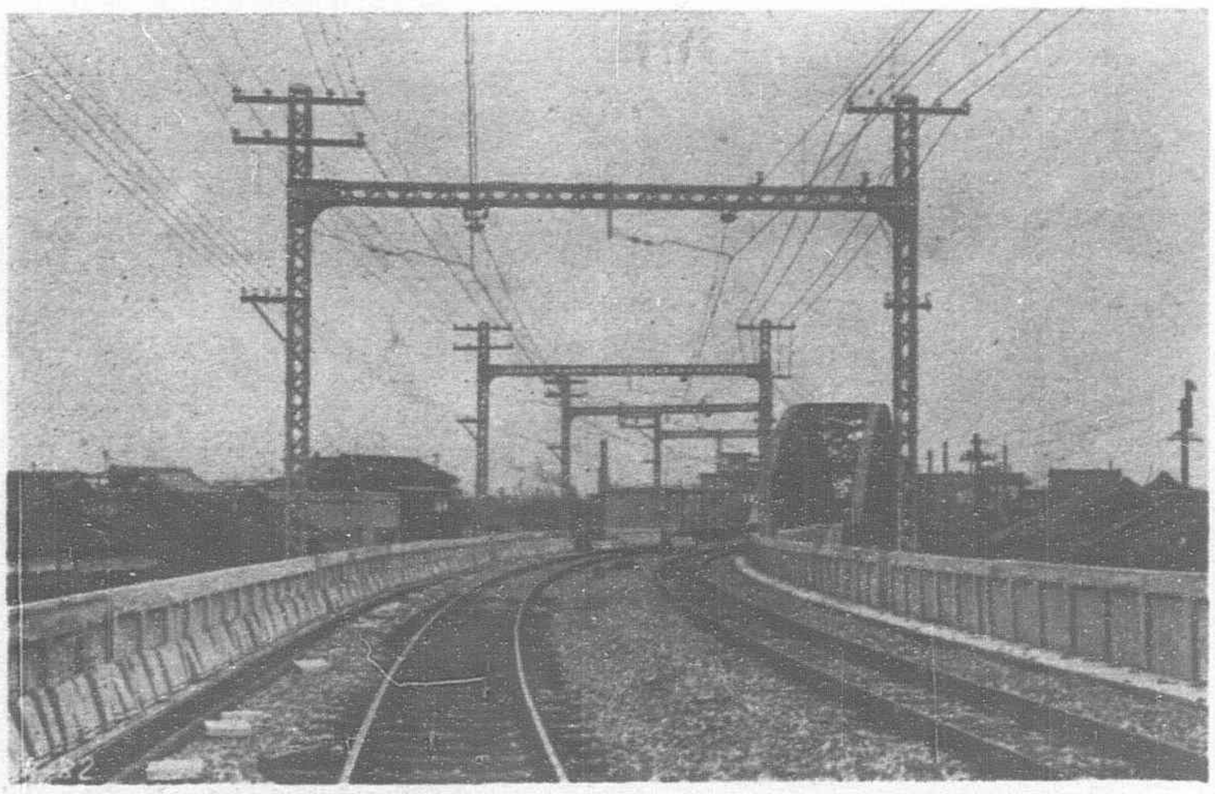
Higashiguchi-bashi (Eastside bridge) was made of steel viaducts encased in reinforced concrete as in the case of Nishiguchi-bashi, but, owing to the hardness of the ground, foundation piles were not required.

The Fourth Section

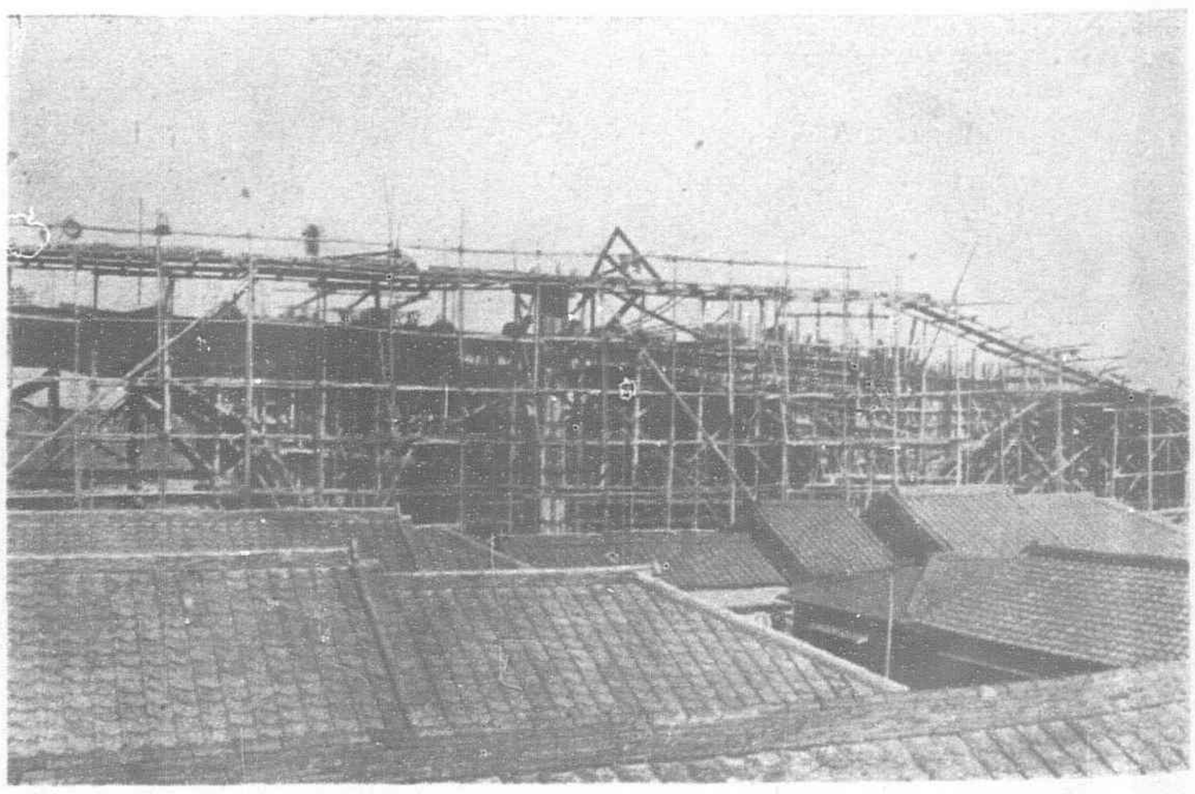
The length of this section is 455 ms. from the Showa-dori (street) to Mikura-bashi, and the grade of most of it is 25 in 1,000. The construction is situated in so high a place and also the ground is so hard, that a reinforced concrete arch (19 ms. center to center of the piers) was introduced as the most economical and convenient type to construct. On the remaining parts other than the arch in this section, 3-span continuous reinforced concrete viaducts were constructed.

The Third Section

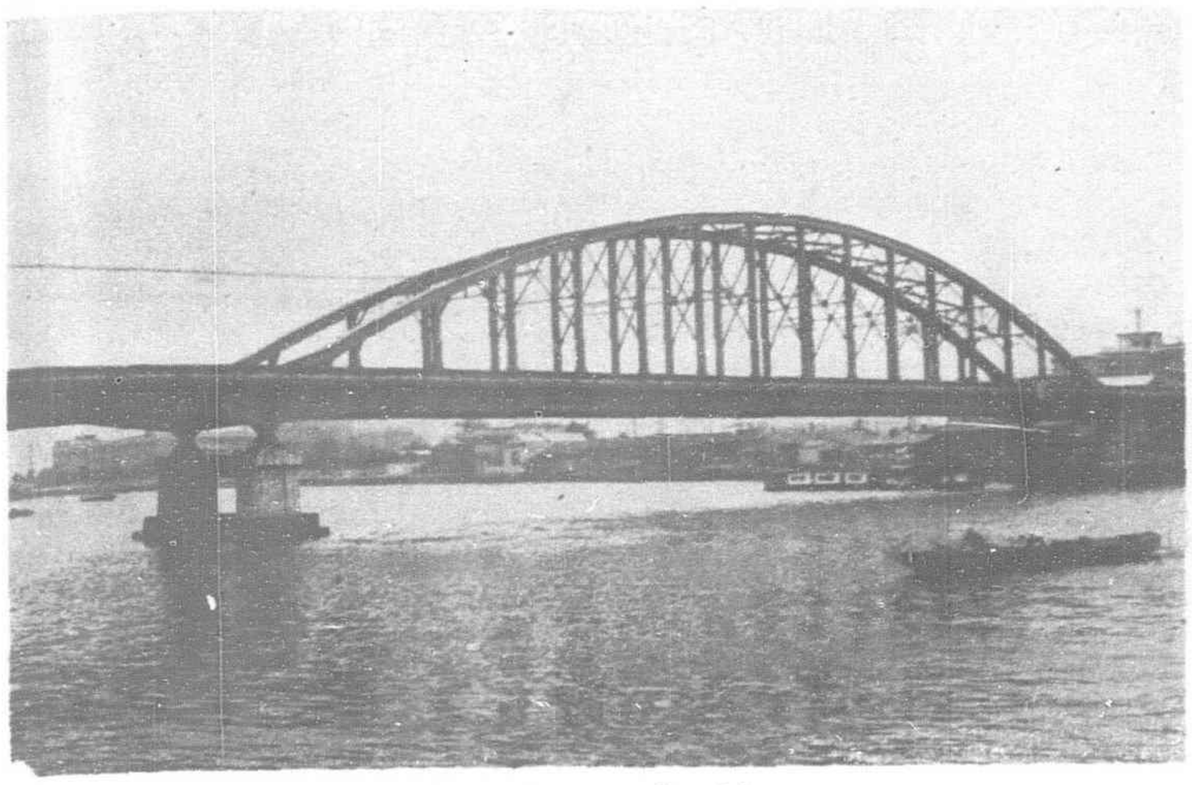
This section extends from the east side abutment of Mikura-bashi to the west bank of the Sumida river including Asakusabashi station and has a length of 801 ms. The ground becomes soft gradually as one approaches the river, and a total of 2,342 reinforced or other piles of 5.5 to 12 ms. in length were driven into the ground. As the density of population near this section is the greatest of the whole line, 14 roads cross through this elevated line. All parts, excepting the over-road bridges of this section, consist of 3-span continuous reinforced concrete viaducts of 6 ms. span (center to center of columns).



Overhead Construction near Sumidagawa-bashi



Arch Centering and Falsework of Sakumacho-bashi

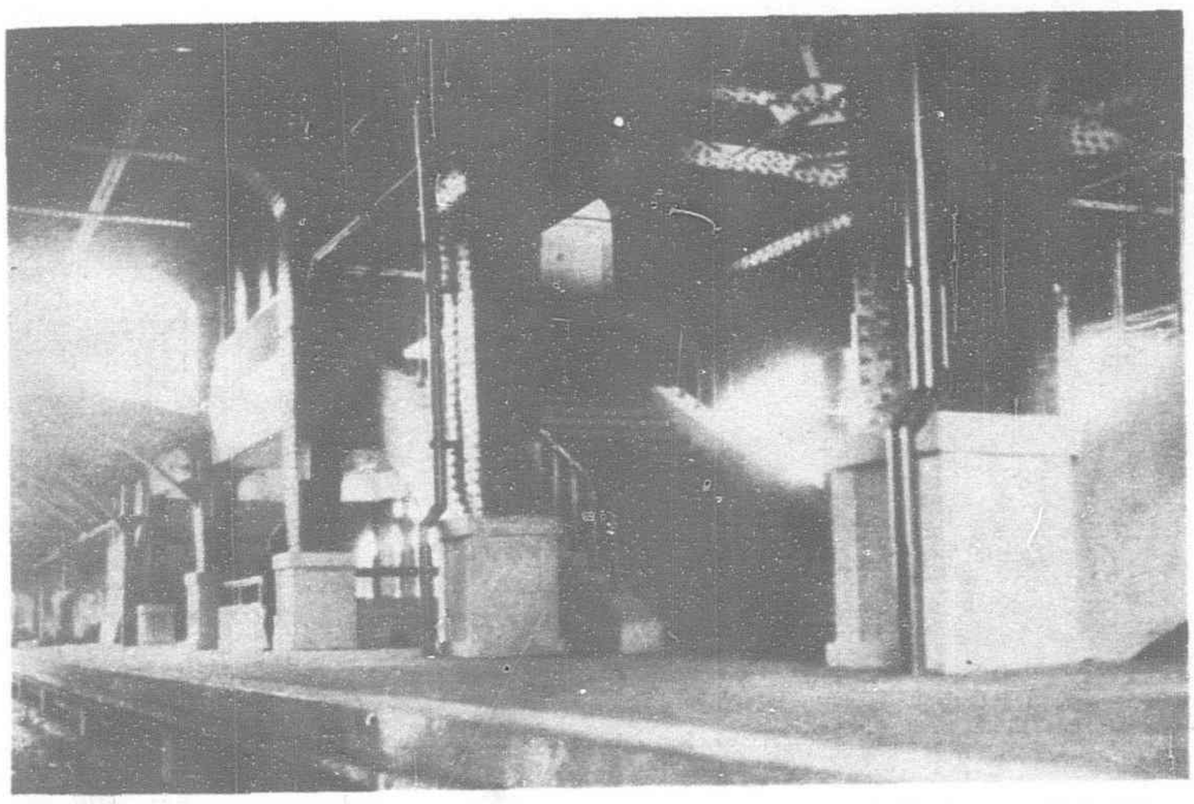


Sumidagawa-bashi

Ryogoku Station

The Second Section

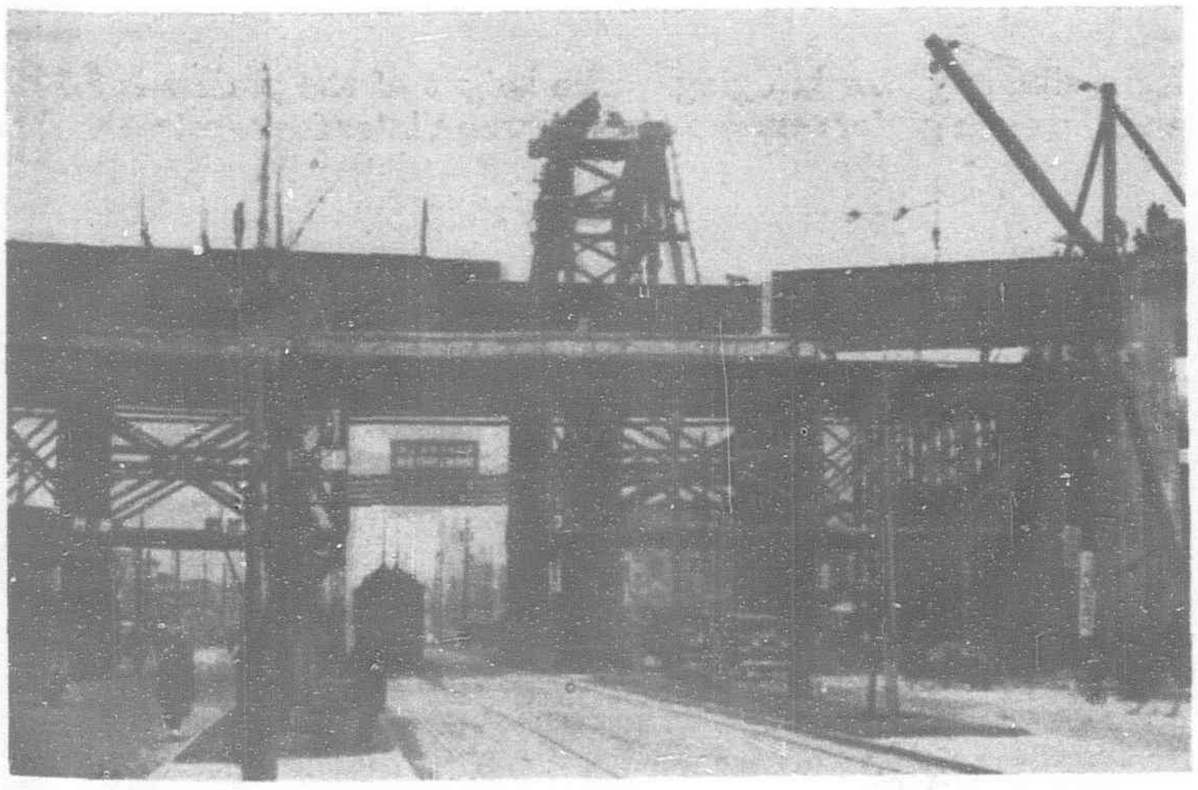
This section is Sumida-bashi of 178 ms. in total length, the girders of which consist of three spans. The center span is 96 ms. with the cantilever arms of 8 ms. (to both sides), which support respectively the 30 ms. side simple span. The center span of this bridge is the double track plate-girders with stiffening arches. reinforced concrete wells (for one pier) of 6 ms. in diameter were sunk into the river for the foundation of both side piers, and the depth between the bottom of the wells and the low-water-level of the river is 17.5 ms. on the Asakusa side and 20.5 ms. on the Ryogoku side. Each cylindrical concrete well was hollow, but had base concrete filling and cover concrete filling of the proper thickness. The upper body of the bridge pier was made upon



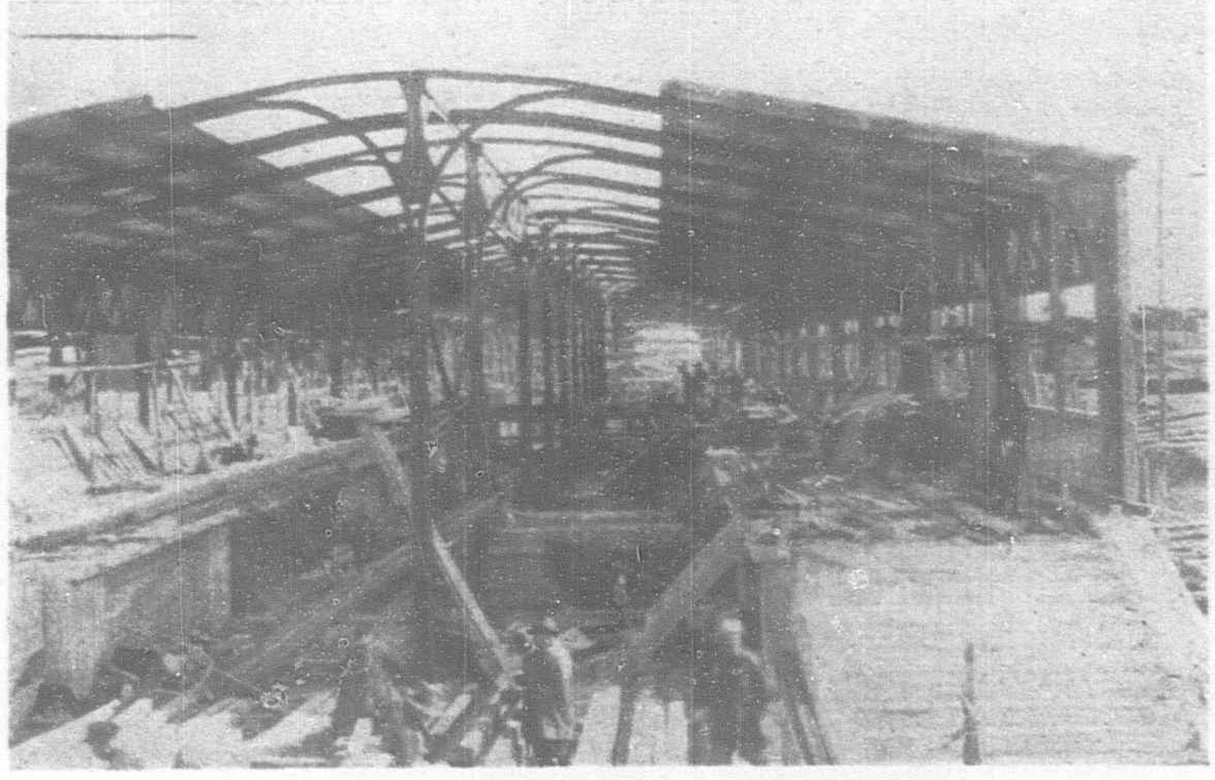
Steps connecting the Overhead Platform at Akihabara Station

General view of Ochanomizu Station from Hijiri-bashi

This type is unique for a railway bridge in Japan. The height between the high-water-level of the river and the lowest part of the girder is 4.95 ms. and the abutments of the bridge were constructed on a pine pile foundation (98 pine piles of 10 ms. long were driven for the Ochanomizu side abutment and 128 piles of 14.5 ms. long were driven for the Ryogoku side abutment). Two this cover concrete filling. No island was made for sinking the wells but curb-shoes were made in the water at a depth of 5.1 ms. in the Asakusa side and 8.1 ms. in the Ryogoku side, and the wells were sunk by continuous concrete laying. The total weight of the superstructure of this bridge is 1,365 tons, and it is the largest bridge in this new line.



120 Feet Plate Girder Bridge on Falsework of Showa-bashi



Construction Work of Platform of Asakusabashi Station

The First Section

This section is at the east end of this new line with a length of 847 ms., 313 ms. of embankment and 91 ms. of viaduct of which was completed in 1928. A station was built on the newly established viaduct part. The ground being the softest in the whole section, 2,114 pine piles 10.6 ms. long and two pine logs (10.6 ms. and 4.6 ms. long) longitudinally spliced piles were required. The superstructure of this part is a series of simple span box rahmen (box type frame) connected with one another by simple slabs to allow of the sinking of the foundation without severe damage.

Progress of Work of Construction

The progress of work of the main construction is as follows:—

	Kinds of work	*Time of commencement of work*	*Time of completion of work*	*Method of execution*	*Names of contractors*
Ochanomizu Section	Reconstruction and earthwork, etc. of Ochanomizu station	May, 1931	Sept., 1932	Contract	Okura Public Works Co., Ltd.
	Track construction work	Aug., 1931	Dec., 1932	Direct Execution of Department of Railways	
Mansei-bashi Section	Foundation and superstructure works ..	Aug., 1931	March, 1932	Contract	Obayashi-gumi
	Bridge girder			Contract	Yokogawa Bridge Works / Ishikawajima Dockyard in Tokyo
	Erection of over-road bridge	March, 1932	May, 1932	Contract	Obayashi-gumi
	Erection of Kandagawa Bridge ..	April, 1932	May, 1932	Contract	,,
	Track construction work	May, 1932	June, 1932	Direct Execution of Department of Railways	
The Fifth Section	Foundation and superstructure works ..	July, 1931	March, 1932	Contract	Zenitaka-gumi
	Bridge girder			,,	Ishikawajima Dockyard in Tokyo
	Erection of Unga-bashi	Feb., 1932	April, 1932	,,	Zenitaka-gumi
	Track construction	April, 1932	June, 1932	Direct Execution of Department of Railways	
The Fourth Section	Foundation and superstructure works ..	June, 1931	Jan., 1932	Contract	Nishimoto-gumi
	Bridge girder			,,	Ishikawajima Dockyard in Tokyo
	Erection of over-road bridge	March, 1932	April, 1932	,,	Miyajima Steel Frame Works
	Track construction work	April, 1932	June, 1932	Direct Execution of Department of Railways	
The Third Section	Foundation and superstructure works ..	May, 1931	Feb., 1932	Contract	Hazama-gumi
	Bridge girder			,,	Ishikawajima Dockyard in Tokyo
	Erection of over-road bridge	Feb., 1932	April, 1932	,,	Hazama-gumi
	Track construction work	April, 1932	May, 1932	Direct Execution of Department of Railways	
The Second Section	Abutments and piers	Feb., 1931	Dec., 1931	Contract	Shimizu-gumi
	Bridge girder			,,	Yokogawa Bridge Works
	Steel girder erection	Dec., 1931	March, 1932	,,	,,
	Track construction work	April, 1932	May, 1932	Direct Execution of Department of Railways	
The First Section	Foundation and superstructure works ..	May, 1931	Feb., 1932	Contract	Zenitaka-gumi
	Bridge girder			,,	Ishikawajima Dockyard in Tokyo
	Erection of over-road bridge	Jan., 1932	March, 1932	,,	,,
	Track construction work	Feb., 1932	June, 1932	Direct Execution of Department of Railways	

Bridges and Viaducts

Of the length of 3,632 ms. of this whole line, the total length of bridges amounts to 2,470 ms. Three of them are spanned over canal and rivers, namely, Kandagawa-bashi, and Unga-bashi, spanned over the canal in the Akihabara precincts and Sumida-bashi, their total length being 244.42 ms.

The number of bridges constructed over roads is 21 including Matsuzumi-bashi, and the total length of which is 375.43 ms.; the number of viaducts is 24 including Matsuzumicho-bashi, and the total length of which is 1,718.77 ms., occupying most of the parts of this elevated line; and the other one is over the line bridge of 131.38 ms. in length in the Akihabara precincts.

A special type of bridge is employed for Kanda-bashi, because it crosses over the river with a sharp skew angle of 27° 30-ft. (right side protruding) and the span length is longer and uneconomical for one span bridging. To meet these circumstances, a special steel rahmen pier was used crossing over the river right angle in the center of span, on which two spans of deck plate girders of ample span length was laid. Such a type of railway bridge is an unprecedented one in Japan. It is economical and also fine from the artistic point of view. In the erection of this girder special methods were used, as shown in the illustrations.

There are two bridges worthy of special mention in over-road bridges, such as Matsuzumi-bashi and Showa-bashi. Matsuzumi-bashi is a tied arch bridge of double tracks with 72 ms. length between the piers, without piers on the road in order to avoid the congestion of road traffic as the bridge crosses diagonally over the junction of the municipal tramways, and its weight is 580.8 tons in all. Showa-bashi is a bridge built over Showa-dori, the "Show" street of the Capital and has a girder span of 44.18 ms., the height of the lower end of which is 10.55 ms. above the ground level. Simple girders of small depth were adopted to avoid producing a cumbrous impression, though the length of the span seems to be too long for a simple girder bridging. The height of the girders is 2.7 ms. and the main girder consists of three web-plates for one track. The total weight of the bridge is 378 tons and the length of its span (44.18 ms.) is the longest span for a simple girder type of railway bridge in Japan.

There are many types of viaducts, *viz.*, simple span or 3-span continuous steel viaduct encased in reinforced concrete, reinforced concrete arch, 3-span continuous reinforced concrete viaduct and box rahmen. All of them were constructed with the object of safety and economy according to the height of the system or condition of the ground, etc. In concrete work special care was taken and the theory of water-cement ratio was applied in practice. Moreover test pieces were made of field mixing concrete, the strength of which was always examined.

In the fourth section a new patent mixing plant, which is named "Wa-ce-creter," was used with very good results. This plant has two merits; firstly, it measures automatically the sand and gravel in weight, and secondly, it prepares a required volume of cement paste (not cement and water separately) for one batch.

Lately the strength of concrete has been considerably increased as the concrete execution work develops. So in the design of this line, the allowable compressive stress was decided as 53 kgs. per square cm. and other allowable stresses were raised accordingly.

The live load assumed for the designing of bridges and slabs, is Cooper's E-33 loading.

The names of bridges are enumerated below in the order of their situation from Ochanomizu to Ryogoku stations.

Bridges

Name of bridge	*Total span length*	*Type*	*Pier*	*Total weight*	*Note*
	m.			ton	
Kandagawa-bashi	54.50	Single track deck girder	Steel frame	283.5	
Unga-bashi	19.12	,,	None	65.8	
Sumidagawa-bashi	170.80	Double track girder with stiffening arch	Two of reinforced concrete twin circular wells	1,365.0	3-span. Depth of the circular wells ....The Ochanomisu side.... about 15m. ....The Ryogoku side.... about 23m.
		OVER-ROAD BRIDGES			
Matsuzumi-bashi	69.50	Double track tied arch with trussed main rib		581.5	
Onari-bashi	36.52	Double track deck girder		223.8	
Showa-bashi	44.18	Double track deck girder		378.3	
Daiichi-Sakuma-bashi	8.35	Reinforced concrete slab			
Daini-Sakuma-bashi	9.26	,,			
Mikura-bashi	22.15	Double track deck girder		84.5	
Edori-bashi	6.20	Reinforced concrete slab			
Daiichi-Mukai-Yanagiwara-bashi	6.20	,,			
Daini-Mukai Yanagiwara-bashi ..	8.10	,,			
Daiichi-Saemon-bashi	15.15	Double track deck girder		44.6	
Daini-Saemon-bashi	6.20	Reinforced concrete slab			
Daisan-Saemon-bashi	6.20	,,			
Daiichi-Fukui-bashi	11.32	Double track deck girder		29.2	
Daini-Fukui-bashi	6.43	Slab			
Asakusa-bashi	37.50	Through girder of double tracks		117.0	3-span pier-steel
Kaya-bashi	6.90	Reinforced concrete slab			
Shinsuka-bashi	6.90	,,			
Daiichi-Hatago-bashi	6.90	,,			
Daini-Hatago-bashi	4.13	,,			
Daisan-Hatago-bashi	8.33	Through girder of double tracks		31.2	
Yokoami-bashi	49.01	Through girder of single track		298.9	2-span pier-reinforced concrete

Viaducts

Standard length of spans denotes the length between the center of the piers

Name of bridge	*Length*	*Standard length of spans*	*Type*	*Type of pier*	*Length of foundation piles*	*Note*
	m.					
Matsuzumicho-bashi	12.70		Reinforced concrete slab		6.0-8.0	Rahmen
Hatagocho-bashi	151.20	10.90	,,	2-post	10.5	Single span rahmen
Akihabara-Nishiguchi-bashi ..	118.75	7.00	,,	2-post and 4-post	7.5-12.5	3-span continuous rahmen
Akihabara-Higashiguchi-bashi	75.34	7.00	,,	2-post and 6-post	none	,,
Daiichi-Sakuma-cho-bashi ..	285.25	19.00			3.5-11.0	
Daini-Sakumacho-bashi ..	49.58	6.76	Reinforced concrete slab	3-post	3.5-5.0	3-span continuous rahmen
Daisan-Sakuma-cho-bashi ..	36.43	6.67	,,	,,	3.5-8.5	,, Abutment-steel frames encased in reinforced concrete
Edoricho-bashi	41.14	6.00	,,	,,	5.5-9.5	,,
Daiichi-Mukai-Yanagiwaracho-bashi	38.99	6.00	,,	,,	6.5-10.5	,,
Daini-Mukai-Yanagiwaracho-bashi	39.34	6.00	,,	,,	6.5	,,
Daisan-Mukai-Yanagiwaracho-bashi	86.14	6.00	,,	,,	5.5-9.5	,, Abutment-steel frames encased in reinforced concrete
Daiichi-Saemon-cho-bashi ..	46.51	6.00	,,	,,	7.5-10.5	,,
Daini-Saemon-cho-bashi ..	45.31	5.00	Reinforced concrete slab	2-post	6.5-12.0	3-span continuous rahmen One part of piers—reinforced concrete
Daisan-Saemon-cho-bashi ..	44.41	6.00	,,	3-post with cantilever	6.5-8.5	,, Abutment-steel frames encased in reinforced concrete
Daiichi-Fukuicho-bashi ..	86.35	6.00	,,	,,	6.5-12.0	,,
Daini-Fukuicho-bashi ..	30.95	5.00	,,	2-post	7.5-12.0	,, Slab and one part of piers—steel frames encased in reinforced concrete
Kayacho-bashi	36.37	6.00	,,	3-post	10.5-12.0	,,
Shinsukacho-bashi	29.88	6.00	,,	,,	10.5-12.0	,,
Daiichi-Hatagocho-bashi ..	32.69	6.00	,,	,,	8.5-11.5	,,
Daini-Hatagocho-bashi ..	39.74	6.00	,,	,,	9.0	,,
Daisan-Hatagocho-bashi ..	42.40	6.00	,,	,,	,,	,,
Daisan-Hatagocho-bashi ..	24.72	6.00	,,	,,	,,	,,
Yokoamicho-bashi	61.56	6.00	,,	,,	6.4-10.6	
Higashi-Ryogoku-cho-bashi ..	263.03	5.50	,,	,,	10.6-15.2	Single span rahmen

Over-Line Bridge

Name of bridge	*Total length between spans*	*Type*	*Pier*	*Total weight*	*Note*
Akihabara-Norikoe-bashi	m. 131.38	Steel viaducts and girders	Steel post	ton 648.9	

Foundation Work

The ground of this section was generally soft, and pile foundations were employed except in a few sections. Near Kanda-bashi, Hatagocho-bashi and Nishiguchi-bashi of Akihabara station piles of 5.4 ms., 10.5 ms., and 7.5 to 12.5 ms. respectively were required. From Norikoe-bashi of Akihabara station the ground becomes harder, and near Higashigushi-bashi of the same station, pile foundation was not required. Though piles of 3.5 to 11 ms. long were partly used, the ground near Daiichi-Sakumacho-bashi was rather hard. But the ground becomes softer and softer, as one approaches the Sumida river, and piles of 5.5 to 12 ms. were driven. From the east bank of the Sumida, the ground is the softest and pine piles of 10.6 ms. and 2 pine log (10.6 ms. and 4.6 ms. long) longitudinally spliced piles were used. Thus the total number of piles used for the foundation of bridges was 7,394, itemized as follows :—

Reinforced concrete tapered piles	3,915
Piles	3,078
Shiraishi's concrete piles	104
Takechi's concrete piles	297
Total	7,394

Waterproofing on Slab-floor

Asphalt lining with cotton fabric sheets was used for the waterproofing of slab-floors and bridge floors. This lining was 6.5 mms. thick containing two cotton fabric sheets, but for expansion joints lining 12.5 mms. thick was used with four cotton fabric sheets. Moreover, to protect these asphalt linings, covering 50 mms. in thickness mortar was laid upon them. But past experience has taught us that carbonate of lime will dissolve from the mortar whenever it rains and congeal in drain pipes thereby stopping the drainage, when the mortar cover surface is left untreated. Therefore, protecting oil was sprayed on the mortar covering to protect it from the action of rain and air.

Hand Rail

Though iron railing had hitherto always been used as hand rails for the existing elevated systems, reinforced concrete hand rails are introduced in this line with the object of preventing against the scattering of ballast in the case of track work and from the noise of the operation of the electric railways.

Tracks

Double tracks of 3.6 ms. between centers and the minimum radius of curvature was 300 ms. were laid. 50 kgs. rails of 12 ms. long, 18 sleepers per rail, tie-plates and screw spikes, two types of the anti-creeper (Tobata and Sumitomo types), concrete track bed for the third and fifth sections and broken stone bed for the other sections were used.

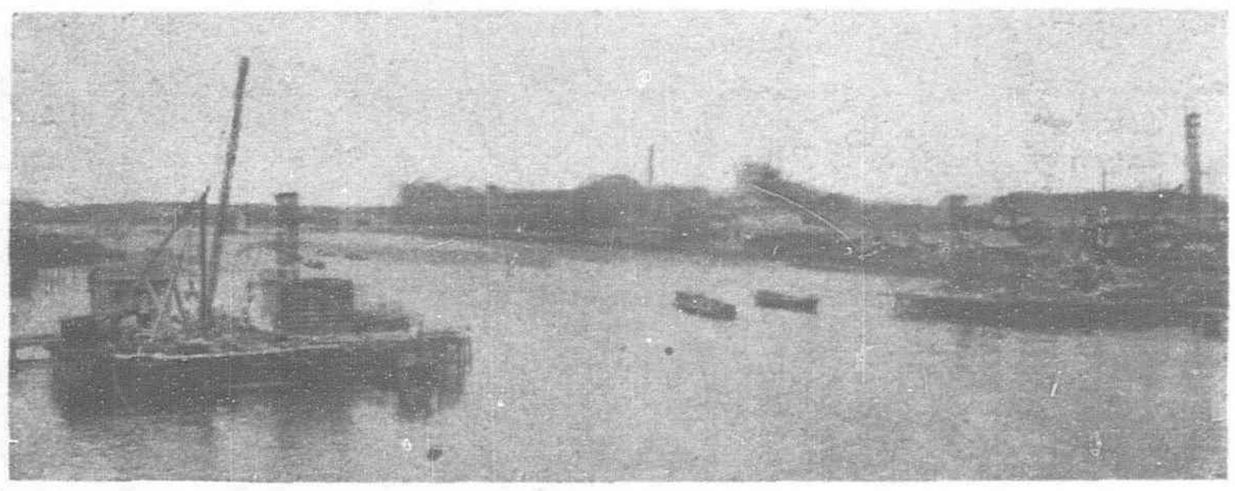
Stations

All the stations on this line were built above the track or under the elevated viaducts and had no excess land. The distance from the road to the track was shortened as far as possible, and the surface edge of the platform projected from the retainment wall below them, so as to make a place of shelter for passengers, who accidentally fall from the platform.

The construction of each station is briefly outlined as follows :—

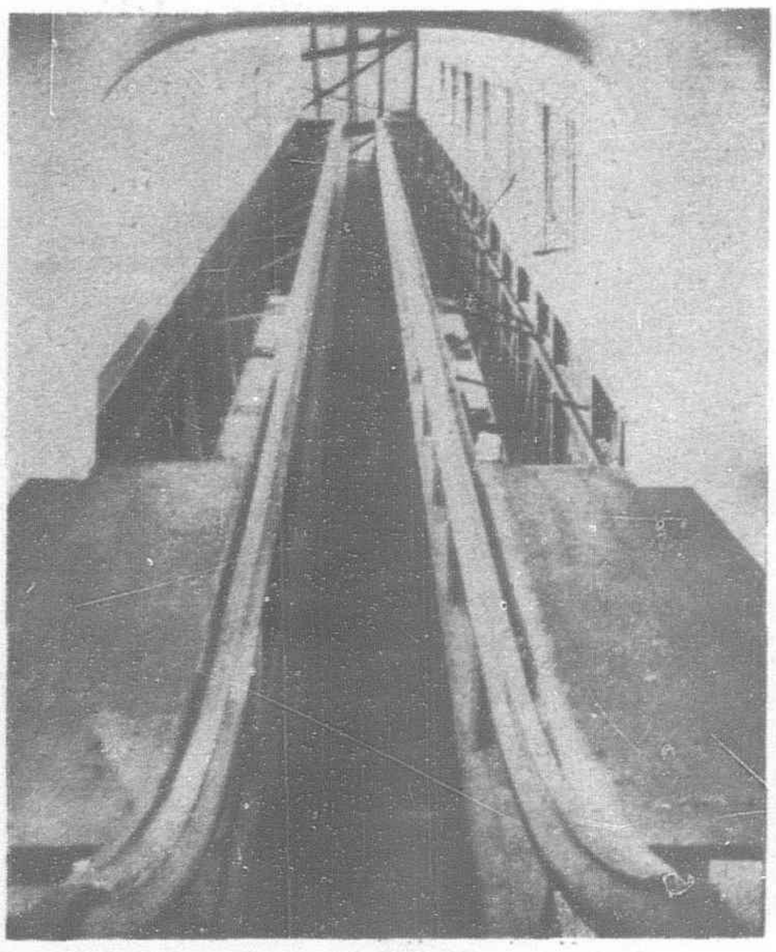
Ochanomizu Station.—The old station, located to the west side of the Ochanomizu-bashi, was removed to the east side of it so as to be reached from both Ochanomizu-bashi and Hijiri-bashi. Since the station is the junction of the Sobu and Chuo lines, it is constructed so that the express and ordinary train lines of the Chuo line can easily connect either with the line for Tokyo station or with the line for Ryogoku station and also the Sobu line can be switched back there.

Owing to lack of land, the main entrance at Ochanomizu-bashi side was built above the tracks. The floor of reinforced concrete slabs was constructed on six rows of steel viaducts,

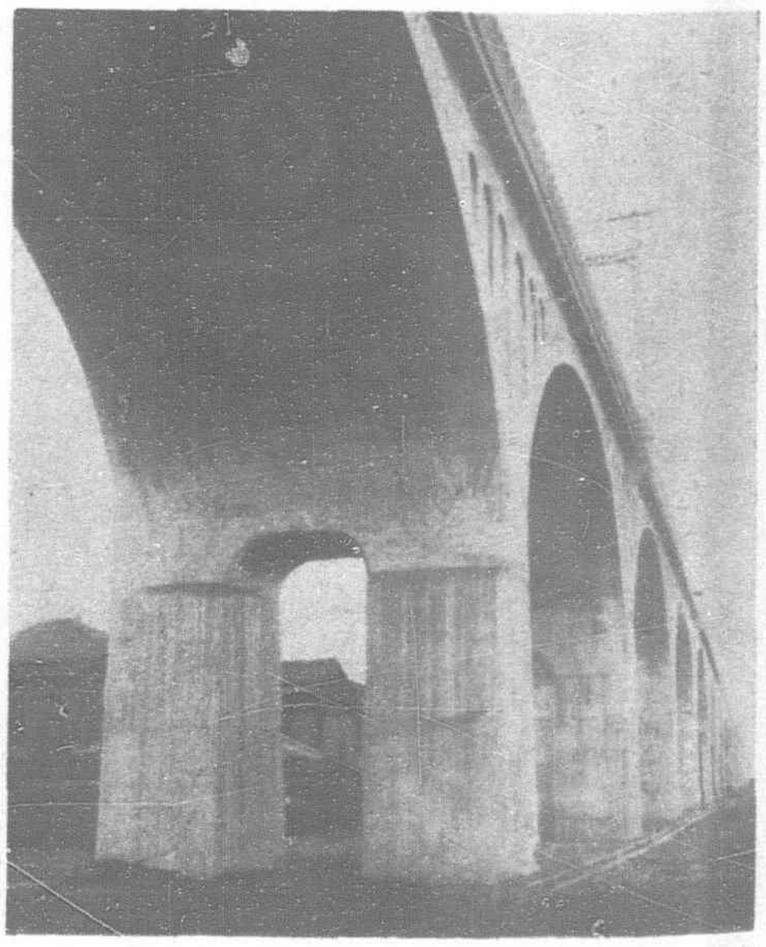


Well Sinking Work of Sumidagawa-bashi

Hatagocho Reinforced Concrete Slab



An Escalator of Akihabara Station

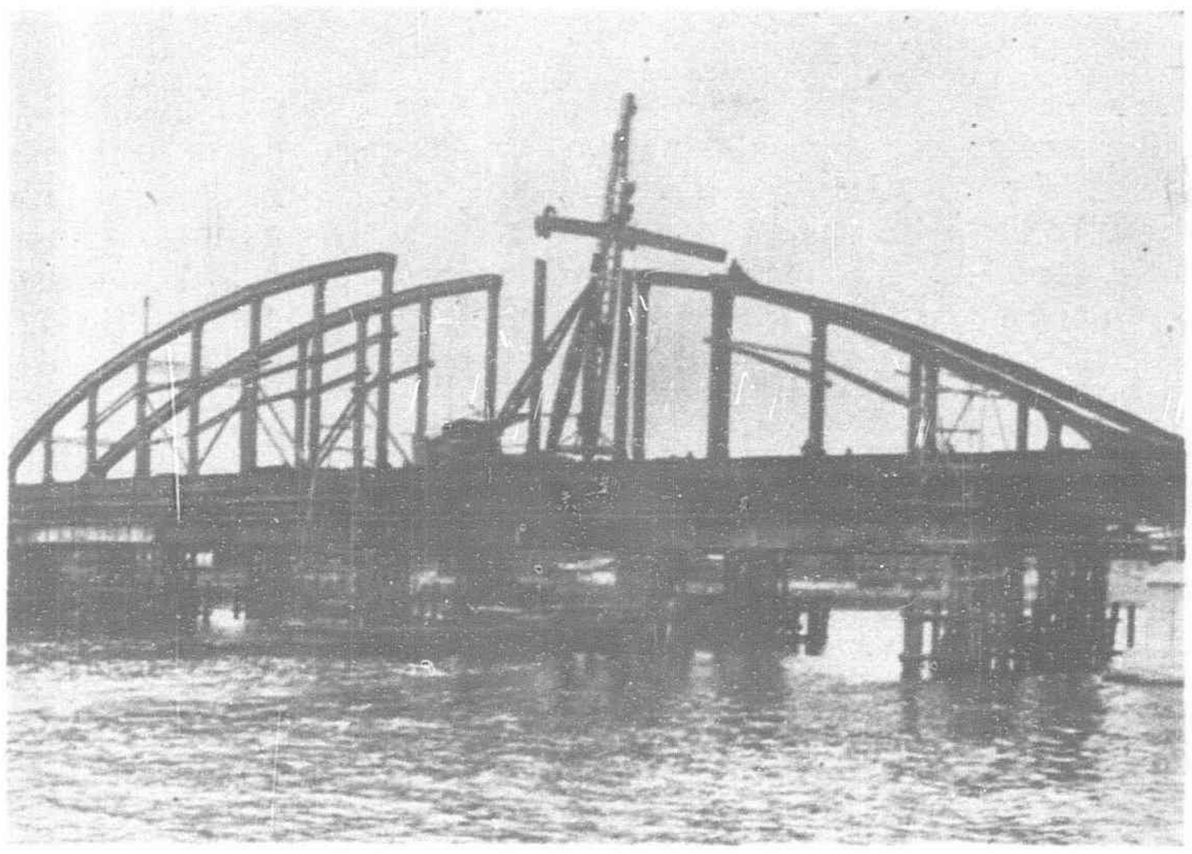


Sakumacho Arch

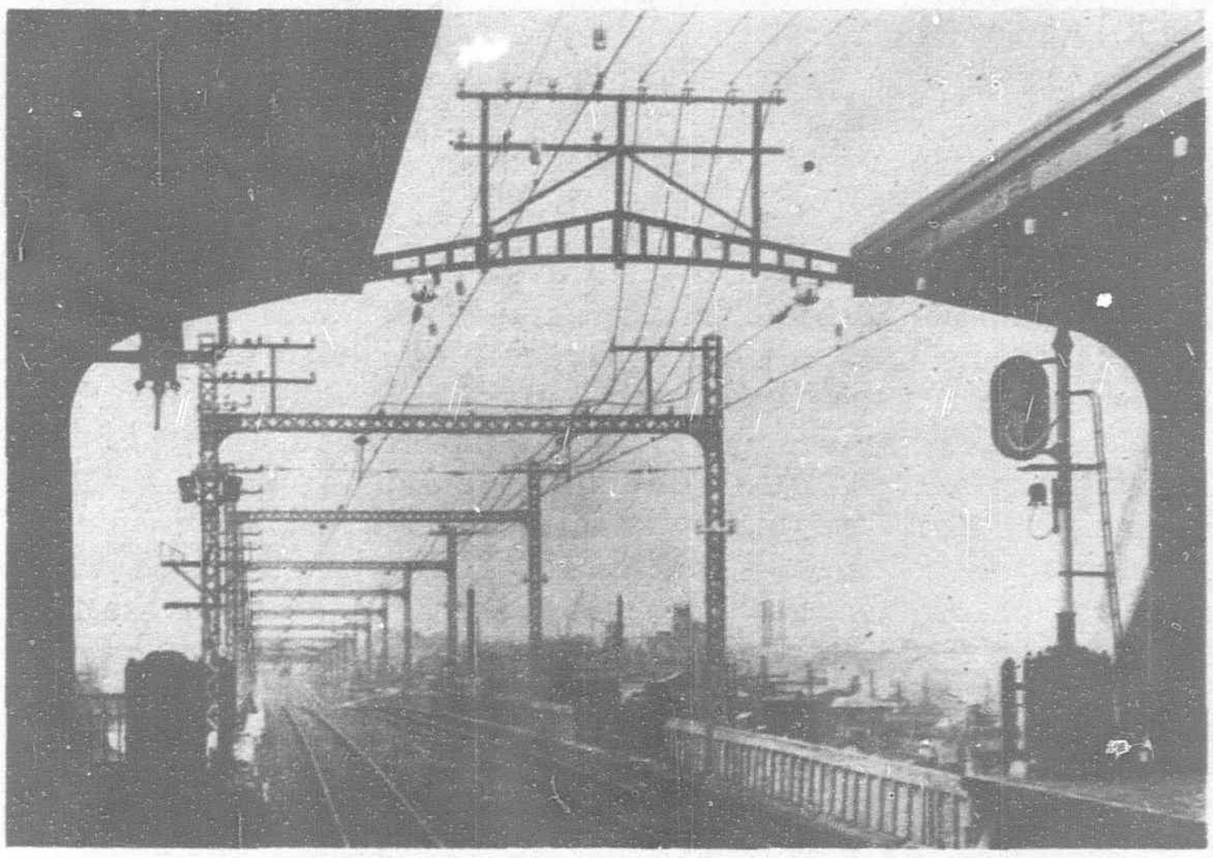
and a one-storied structure of 416.4 square ms. was built on that floor. The other main entrance at Hijiri-bashi side is a one-storied structure of 157.3 square ms.

Two platforms of island type of 152.5 ms. in length were built, and it was decided to make the width of that for the up lines 6.5 ms. and that for the down lines 5.9 ms. after taking the density of passengers into account. The inner two lines are used for the Sobu lines and the Chuo line uses the outer two lines.

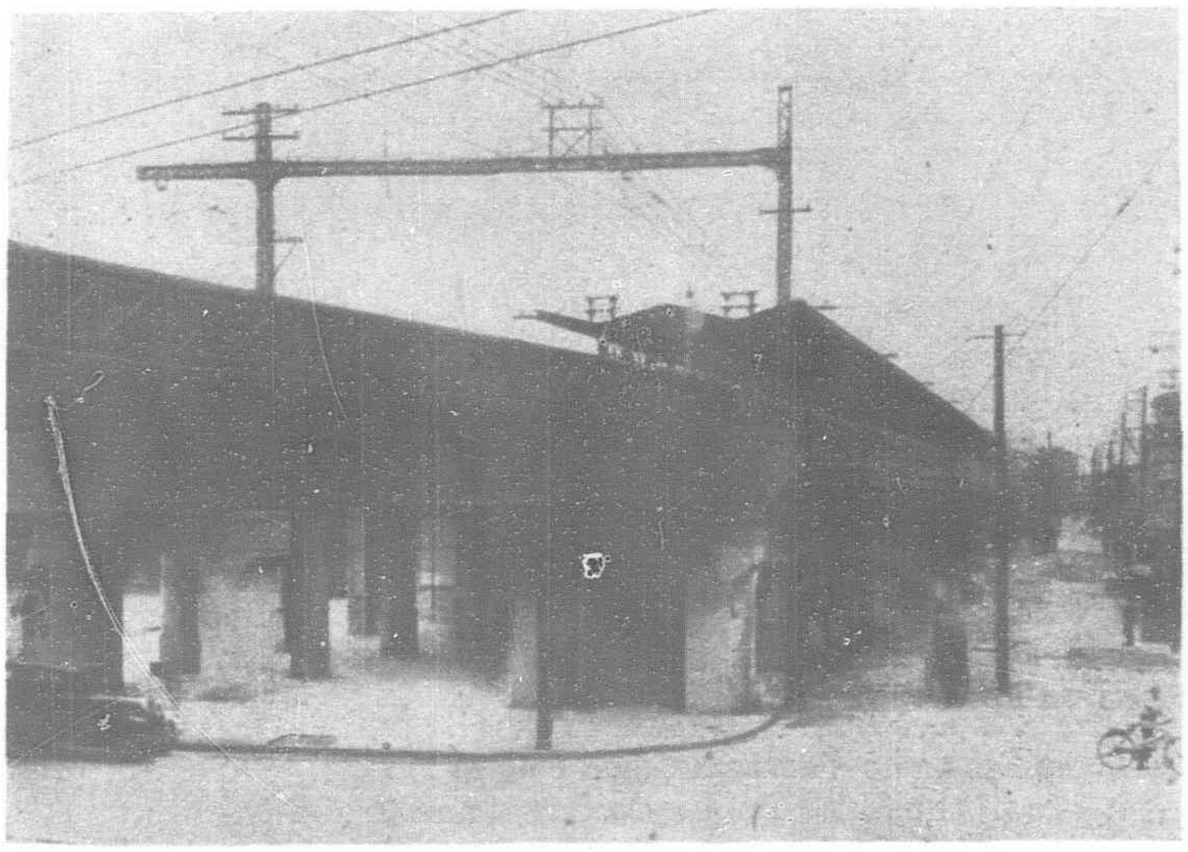
AKIHABARA STATION.—This station was well known as a main freight station in Tokyo. After the completion of the elevated line between Ochanomizu and Ryogoku stations, it became also the junction of the crossing lines and played an important part as a



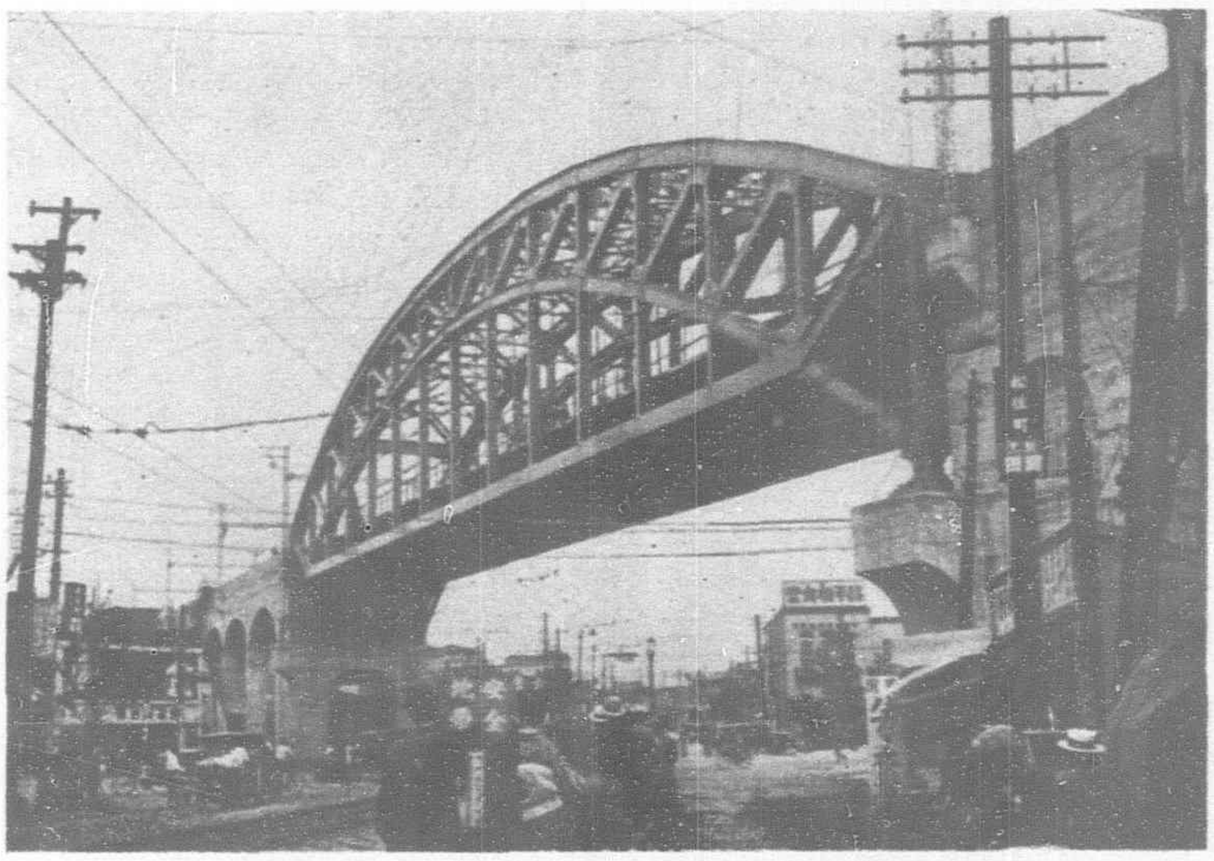
Erection of the Center Span (Arch with stiffening Girder) of Sumidagawa-bashi



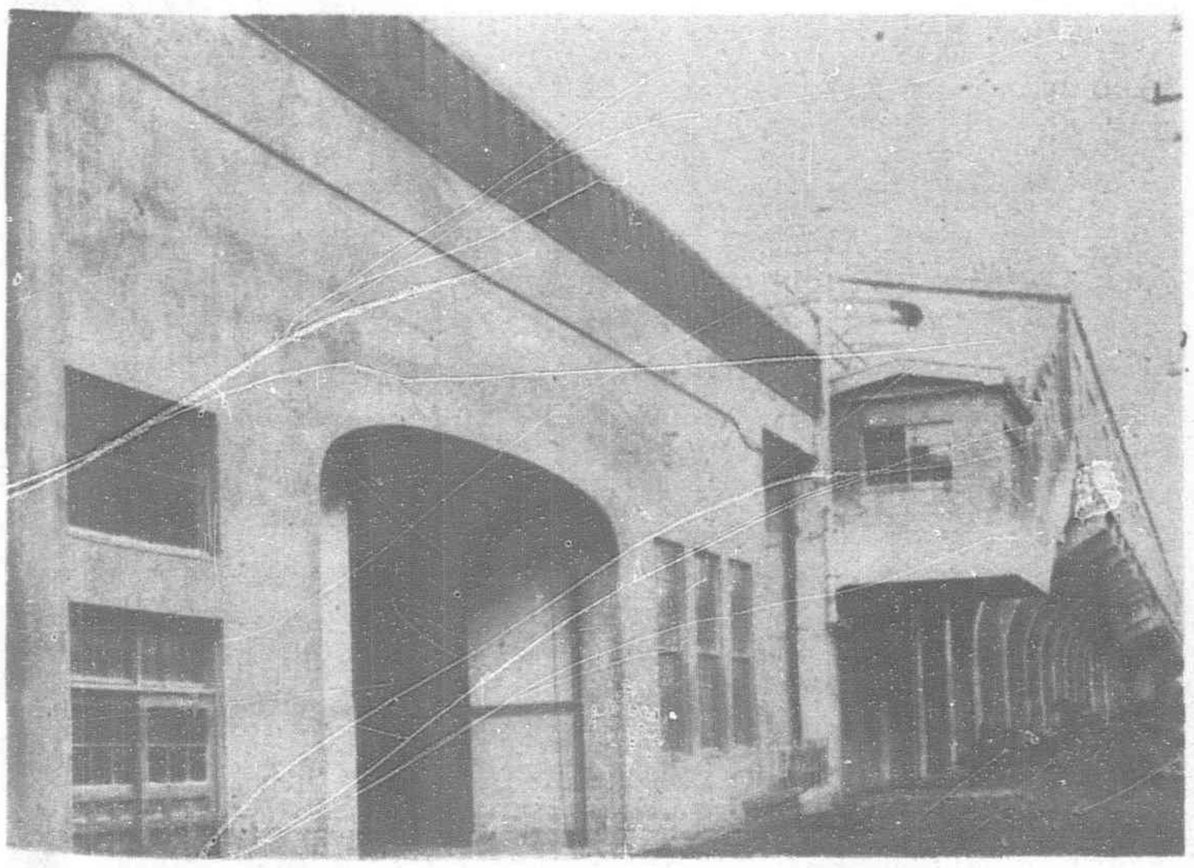
Overhead Construction Near Asakusabashi Station



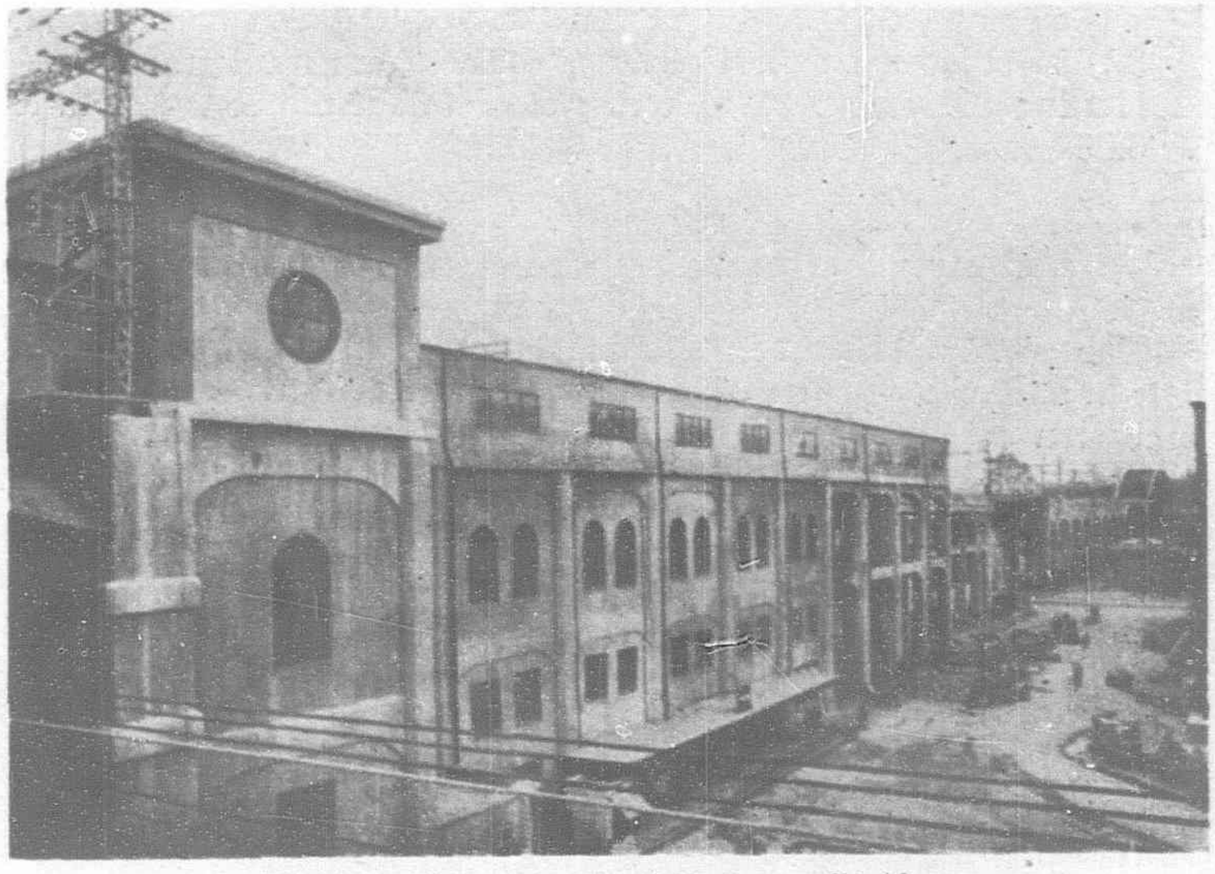
Higashi-Ryogokucho Over-road Bridge



Matsuzumicho Over-Road Bridge



Side view of Asakusabashi Station



Nishiguchi-bashi of Akihabara Station

passenger station for changing. The Sobu line crosses above the other, and its platform stands at the height of 15.25 ms. from the ground level, the difference between it and the lower platform being 7.66 ms. They are opposite-side platforms of 211 ms. in length and 6.5 ms. in width and connected by steps. For the convenience of passengers from the road, an elevator for 50 persons and an escalator are equipped on both platforms on the east and west sides respectively. Having a width of 600 mms. and a speed of 28 ms. per minute, the escalator has a transportation capacity of 4,000 persons per hour. Both main buildings in the east and the west sides of the station were constructed under the elevated lines and have an area of 611.8 square ms. and 1,160.1 square ms. respectively.

ASAKUSABASHI STATION.—The front entrance of this station faces Asakusa-Kuramae-dori (street) and the height of the platform is 8.1 ms. from the ground level. Opposite side platforms of 3.9 ms. wide were constructed, the lengths being 151 ms. for the up line and 150 ms. for the down line. To save the expense and trouble of purchasing land, the platforms were built overhanging the road along the line. The back entrance was built on Saemoncho-dori (street). The structures of the station were built under the elevated lines as in the case of Akihabara station, and the areas required for the construction were 257 square ms. for the front entrance and 285.7 square ms. for the back entrance.

RYOGOKU STATION.—The front entrance for the electric railway (412.9 square ms.) was built under the elevated line on the south side of the old station looking on to the main street, and the back entrance of 234.8 square ms. was constructed on the east side. Under the platforms between the two entrances (847.9 square ms.), the baggage office, the newspaper and magazine handling office and the post office were built.

The platform is island type of 9.3 ms. in width and 161.2 ms. in length. Passengers can change from steam trains to electric cars, or *vice versa*, through an intermediate passage. At the east end of the platform, a baggage platform of 5.3 ms. wide and 24.6 ms. long is built, and transhipment of baggage between steam trains and electric cars is performed by elevators and through a subterranean freight passage.

Main Materials

Materials used for this construction work were mainly domestic products, except a few materials, such as window glass and lonsicar (mixed in paving), etc. Among the materials, of which the main structures were built by the contract, the department of railways provided cement, steel girders and old rails in the construction of Ochanomizu and Manseibashi sections, and ballast, sand, cement, steel girders and old rails for the five sections from the fifth to first, and the rest were bought by the contractors.

The quantity of materials used for the construction is as follows :—

Cement, 415,640 bags ; ballast, 75,800 cubic ms. ; sand, 38,480 cubic ms. ; steel girders, 4,212 tons ; steel frames (including old rails), 4,640 tons ; steel for reinforced concrete, 5,060 tons.

Rough Estimate of Construction Cost

The construction cost of some parts of this line is not yet settled, and the construction of some parts was performed in connection with other works before the commencement of the construction work of this line, so that the accurate cost cannot be calculated. But the amount of money already paid in rough estimation is as follows :—

	Yen
Cost for land	3,221,300
Cost for earth-work	411,500
Cost for bridges and viaducts	2,815,100
Cost for tracks	239,500
Cost for stations	1,012,500
Others	234,100
Total	7,934,000

Electric Works

OVERHEAD CONSTRUCTION.—The electric car line between Ochanomizu and Ryogoku station, opened recently, forms a part of the electrification between Iidamachi and Chiba station. The single trolley wire system in 1,500-volt direct current was adopted, as in the case of other electrified lines near Tokyo. The trolley wire consists of 170 mm.^{2} grooved hard-drawn copper wire and is suspended in Single Catenary System using 7/4 mm. stranded steel cable as messenger wire.

The supports are almost all steel poles and the standard spans are 45 ms., 36 and 27 ms. To decrease the voltage drop, two feeders of 61/2.6 mm. stranded hard-drawn copper cable are provided for each up and down line. As return circuit rails are used and as their joints double rail bonds of equivalent copper section of 110 mm.^{2} are used.

The quantity of materials used in the main work of this line consists of 146 steel poles, seven wooden poles, the trolley wire of 4,360 ms. route length (its total length is 8,900 ms.) and the feeder of 4,200 ms. route length (its total length is 18,670 ms.).

FEEDING SYSTEM.—Though electric power is planned to be supplied to the electric car lines both from a substation, which will be built at Kinshi-cho, and the Kanda or the Iidamachi substation, the construction of the Kinshi-cho substation and the feeder lines between Iidamachi and Ochanomizu stations is not yet completed. Therefore, the electric car lines are fed mainly from the Kanda substation and, in case of necessity, from the Ueno and Shiodome substation through the bus lines of the Kanda substation.

KANDA SUBSTATION.—The Kanda substation was built in the right of way adjacent to the Kanda switching station near Kanda station. Through Kanda or Akihabara station, electric power can be supplied to the electric car lines for Ueno-, Ryogoku-, Shimbashi- and Iidamachi-station from the Kanda substation. The building of this substation is three storied with one story under ground. It is made of reinforced concrete, and has a capacity for converting equipment of 10,000 kilowatts. At present the converting equipment of 4,000 kilowatts is completed.

As this substation is situated in the city and the noise of rotating machines has to be overcome, two sets of mercury vapor rectifiers, one made in the Shibaura Engineering Works and the other in the Mitsubishi Electrical Engineering Co. were employed. With the object of obtaining the most efficient rectifier, the builders ordered a set from each of the above two companies and the Hitachi Engineering Works, and decided to install the products of the Shibaura Engineering Works and the Mitsubishi Electrical Engineering Co. in the Kanda substation, that of the Hitachi Engineering Works being set up in the Oimachi substation.

The rectifiers consist of two sets of 2,000 kilowatts, and each set is composed of two units of 1,000 kilowatts (1,500-volt direct current, 666 amperes) connected in parallel. Each set is connected with a three-phase transformer to change the energy of 22,000-volt three-phase alternating current, which is transmitted from the Kanda and Tabata switching stations to 1,500-volt direct current. Moreover, in this substation wave filters made at the Shibaura Engineering Works are installed to prevent the inductive disturbance of telegraph lines caused by imperfectness of rectification.

INCIDENTAL ELECTRIC WORK.—Other than the above, in the overhead constructions of the Chuo line, the high voltage distribution lines and the underground transmission lines, which would suffer by the additional construction of tracks, had to be removed and mended. With the progress of the work, exchange of tracks was properly effected, so as to give no inconvenience in the operation of electric cars and supply of energy.

The progress of electrical works in this line and the cost thereof are as follows :—

The Progress of Electric Works

Kind of work	*When commenced*	*When completed*	*Kind of execution*	*Notes*
No. 1 building work of trolley wires between Iidamachi and Ryogoku stations and others	April, 1932	June, 1932	Direct execution of Department of Railways	Between Iidamachi and Ochanomizu is not yet completed
No. 2 „ „ „ „ „	Feb., 1932	June, 1932	„	
Feeder incoming work to Kanada Substation ..	April, 1932	June, 1932	„	
Construction work of Kanda Substation ..	June, 1931	Feb., 1932	Contract	Contractor, Konoike-gumi
Electric work in Kanda Substation	Feb., 1932	June, 1932	Direct execution of Department of Railways	
Reconstruction work of trolley wires and the others in connection with building new trolley wires near Ochanomizu Station ..	July, 1931	Dec., 1932	„	
Removing work of underground transmission cable	May, 1931	Dec., 1932	„	

THE COST OF ELECTRICAL WORKS.

	Yen
Overhead construction	82,000
Incidental electrical work	83,500
Electric buildings	155,500
Electric equipments	208,000
Total	529,000

Radio in Japan

THE first broadcast in Japan went on the air on March 22, 1925, when a 500 watt Tokyo broadcasting station began experimenting, using the call letters JOAK. At about the same time, two more stations were established, one in Osaka and the other in Nagoya. During the year that followed the three stations actively broadcast programs that were rich in local color. They were small scale stations, none of them exceeding one kilowatt in power.

An agreement was made on August 6, 1926, on a plan that had been under consideration by the three stations. They established a public service juridical organization called the Broadcasting Corporation of Japan, unifying the broadcasting activities of the country. The total number of subscribing listeners brought into the corporation with them by the three stations was over 338,000.

The broadcasting Corporation of Japan has its head office in Tokyo and branch offices in seven different parts of the country. The head office co-ordinates the work of the branch offices, formulates new plans for them, and draws up their budgets. The branch offices are situated in the most important cities of the seven administrative districts into which the country has been divided.

With the organization of the Broadcasting Corporation of Japan, future plans for broadcasting in Japan were announced. The power of all stations was increased to 10 kilowatts and they were connected by wire lines for the relaying of programs. Other improvements are being made annually and already nine new relay broadcasting stations have been built and three others have been started, under plan to establish such stations (mostly 500 watt and not to exceed three kilowatts) in suitable locations in the seven administrative districts.

The broadcasting business in Japan is all carried on by the broadcasting Corporation of Japan. Its supervision is in the hands of the Government, which passes upon all undertakings, audits all accounts and censors all programs. The Government license to operate is limited 10 years.

To-day, the Broadcasting Corporation of Japan is drawing up its second great plan for expansion, and it is certain that when the plan is carried out the broadcasting business in Japan will assume an entirely new aspect and the activities will go forward with conspicuously increased power.

JOBK, for instance, which is situated in Osaka city, is one of the two largest main stations of the Broadcasting Corporation of Japan, the other being JOAK (the Tokyo Central Broadcasting Station). The district over which it has control includes 10 prefectures, in which are situated Osaka, the communicational and industrial center of Japan ; Kyoto and Nara, cities rich in artistic and natural beauty ; and Kobe, the great port, besides 10 other cities, large and small.

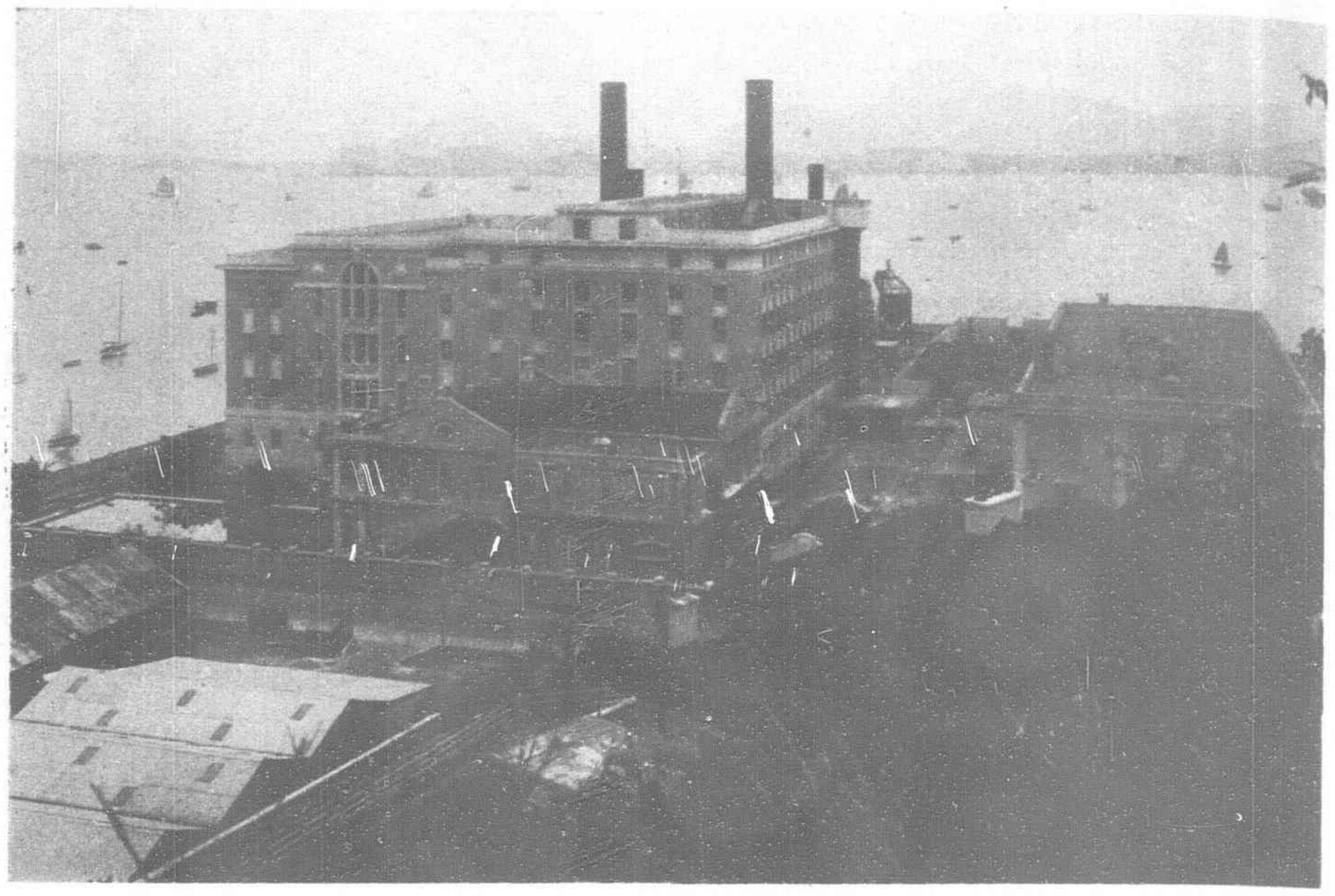
Within the district over which JOBK has control, it carries on publicity work for subscribers, collects subscription fees, operates the broadcasting business in general, and manages the relay broadcasting stations. Its present office and studio are inadequate, but it has already purchased a building site of 1,000 tsubo in front of Osaka Castle, on which it plans to erect an impressive building.

While a noted difference between the two main stations in Japan, JOBK (Osaka), and JOAK (Tokyo) is the difference in the type of music broadcast, they both lay emphasis upon giving up-to-the-minute news on politics, finance and general news. Tokyo being more cosmopolitan than Osaka, has taken fancy to more Westernized offerings. The major part of the music programs broadcast are Western music, while Osaka has adhered to the national type of amusement, and naturally the music broadcast from JOBK is typical of the Japanese music such as koto, shamisen and shakuhachi ; singing by popular instructors of the classical songs, etc.

An international aspect of broadcasting in Japan has been offered by such programs as the message of King George and the speeches of the various representatives of the nations at the opening ceremony of the Naval Conference at the Royal Gallery in London, May, 1930 ; the congratulatory broadcasts of the premiers of Japan and Great Britain and the United States President ; a Japanese-American Christmas exchange program in 1931 ; an Emperor's Birthday Japanese-American exchange program ; an American Decoration Day exchange program ; an American Independent Day exchange program and a Meiji Day Japanese-American exchange program. Plans are being made for more and more international broadcasts, the last being the broadcasting of the Olympic games, for which, Japan sent three of the most popular sport announcers.

One of the peculiarities of the radio in Japan is that one who wishes to install a radio set in his home must first present to the government an application for permission to purchase his set. All broadcasting stations of the Broadcasting Corporation of Japan handle these formalities for subscribers. Upon the receipt of the government sanction, the station to which the listener has applied issues a listener's mark and the formalities are finished. The broadcasting station collects a subscription fee of 75 sen a month. Provision is made for the free use of sets supplied exclusively for educational purposes in primary and intermediate schools and for the consolation of the blind and other unfortunates.

The Hongkong Electric Company, Limited



North Point from South-East

THE supply of electricity to the Island of Hongkong was commenced in December, 1890, the Hongkong Electric Company having been formed the previous year. The first power station was erected in the Wanchai district, the original plant consisting of two 50 kw. alternators, rope driven by " Robey " steam engines, and two arc lighting dynamos. Current was generated at 2,200-volts, single-phase, 75-cycles, the low tension distribution being carried out at 100-volts. The plant capacity at the end of 1914 was 2,600 kw. of which 2,000 kw, was Diesel driven.

From the rapidly increasing demand for light and power at this period it was apparent that the future needs of the Colony could not be supplied from the Wanchai station. The site was situated in a congested district on the hillside, the chief difficulties being lack of space for coal storage and the impracticability of obtaining sea water for condensing purposes. The North Point Station was put in commission during February, 1920, and stands on a site reclaimed from the sea and is situated approximately three miles from the center of the City of Victoria.

The original equipment consisted of two 1,500 kw. British Thomson-Houston turbo-alternators generating at 6,600-volts, three-phase, 50-cycles, and three 25,000 lbs./hour Babcock & Wilcox C.T.M. boilers, this plant being subsequently augmented by the addition of three 5,000 kw. turbo-alternators and five Babcock & Wilcox C.T.M. type boilers. Fig. 1 shows the turbo plant in No. 1 engine room.

The generating plant capacity at the end of 1925 totalled 18,000 kw. with boiler plant capable of a normal evaporation of 207,000 lb. steam per hour. The number of units generated during this particular year was 32,392,400 with a maximum load of 9,200 kw.

Extensions to the turbine and boiler houses were carried out in 1927-1928 to accommodate plant of an increased size, consisting of two 50,000 lb. per hour Babcock & Wilcox C.T.M. type boilers and one 10,000 kw. British Thomson-Houston turbo-alternator. Fig. 2 shows the extension station from the south-east. To meet the further increasing demand a 12,500 kw. continuous maximum rating, Brush-Ljungstrom turbine designed to operate at 400 lb. per sq. in. steam pressure shown in Figs. 3, 4 and 5 and two 75,000 lb. per hour normal evaporation Stirling boilers supplying steam at 425 lb./sq. in., and shown in Figs. 6 and 7 were installed in 1932.

A short description of the Brush-Ljungstrom turbine will be of interest. The set is designed to give a continuous maximum output of 12,500 kw. at 6,600-volts, three-phase, 0.8 p.f., when supplied with steam at 400 lb. per sq. in. and 750° Fahr. total temperature at the stop valve. The blading consists of 35 rings of the radial flow type and two stages of axial flow blades on each turbine disc. Each disc is built up in three sections connected together by two series of radial taper bolts. An automatic overload valve is provided for admitting steam to an intermediate stage of the blade system to enable the set to operate under overload conditions. The alternators are fitted with embedded temperature indicators and are ventilated on the closed air system. One air cooler is fitted in the air circuit of each alternator and is supplied with water drawn from the main sea water circulating system. Separate motor driven fans are included in the air circuit. The condenser is of the Brush-Delas type fitted with banks of staggered tubes which give the maximum cooling effect for any particular surface area of tubes and practically no throttling effect. The output for the year 1931 was 46,085,300 units generated, the maximum recorded load being 12,300 kw.

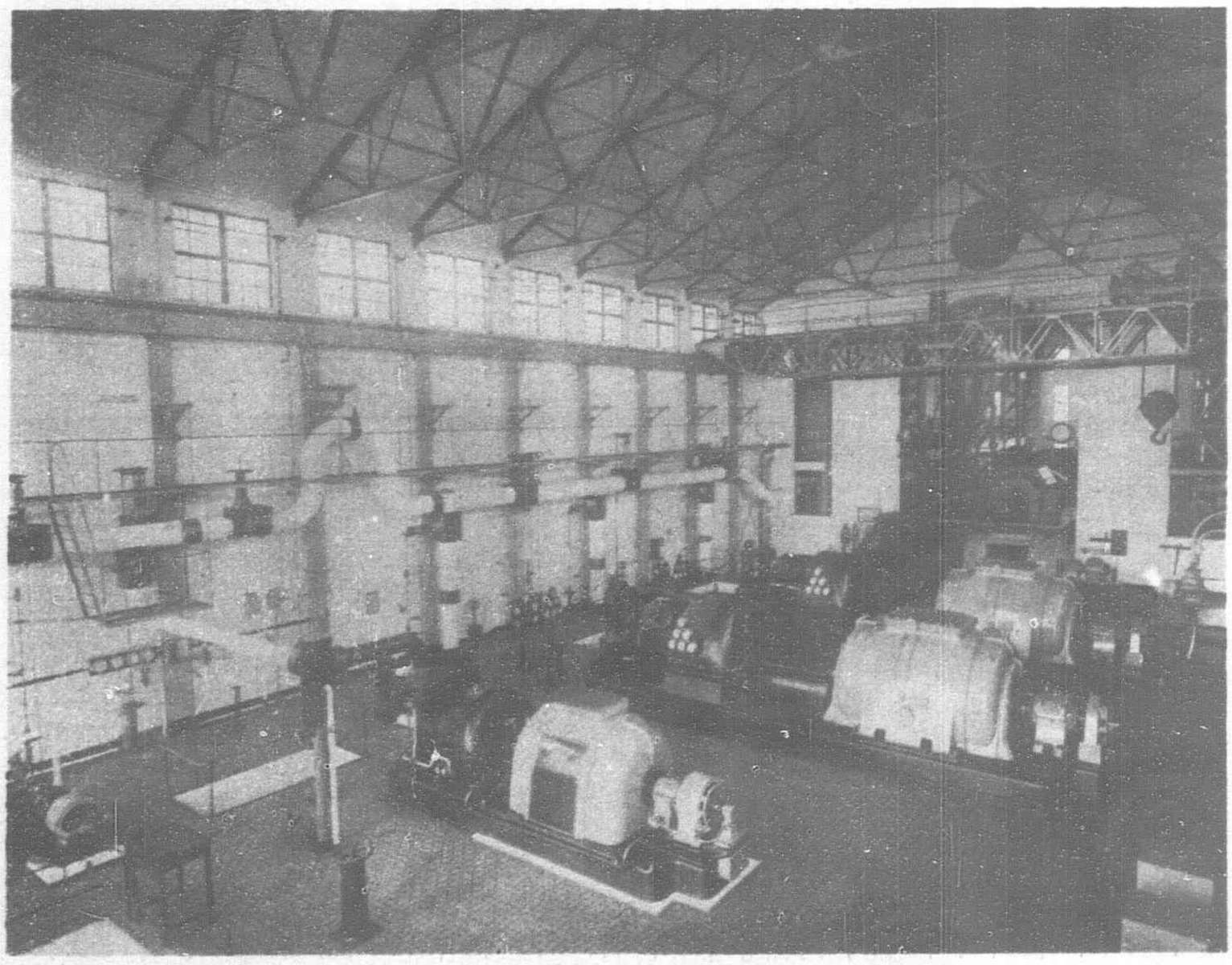


Fig. 1.—The No. 1 Engine House

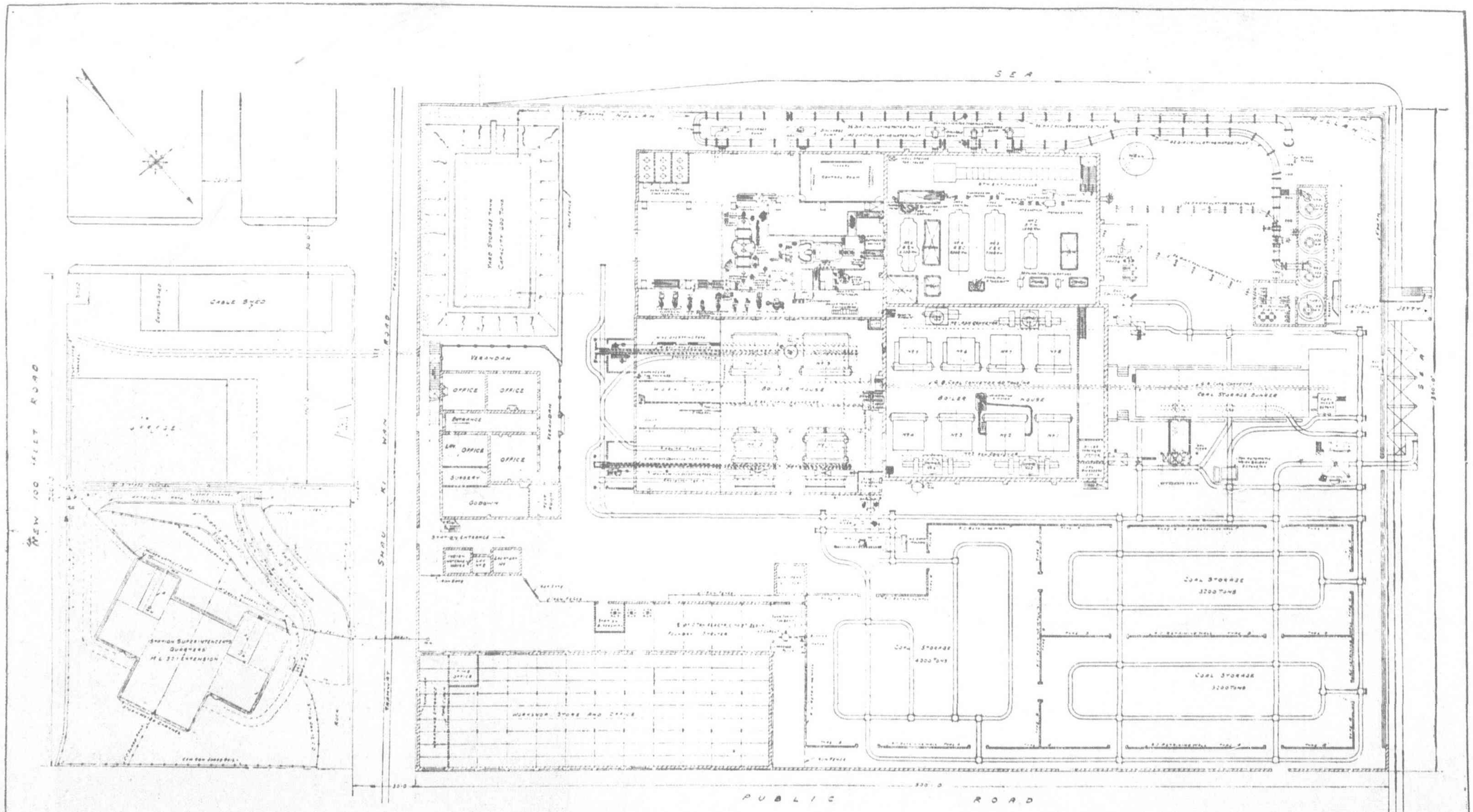
Describing the main features of the North Point Station it will be seen from the general layout, shown in Fig. 8, that the coal storage space is divided into three compartments and surrounded by walls which are made of reinforced concrete 14 feet six inches high. The reason for dividing the space is due to the fact that the fuel burnt is comprised of a mixture of anthracite and bituminous coal.

The amount of coal capable of being accommodated when dumps are full is 11,000 tons.

The coal is brought alongside the sea wall in junks and unloaded by coolies carrying one hundredweight lots, which are weighed before being deposited on the dumps.

The coal required for the boiler houses is taken from stock by Jeffrey loaders capable of handling 20 tons per hour, and discharged into tipping trucks of 12 hundredweight capacity.

The trucks run on a two feet gauge railway passing over Avery automatic totalising weighing



NORTH POINT GENERATING STATION

GENERAL ARRANGEMENT OF BUILDINGS & PLANT

SCALE 1" = 20 FEET

REVISED 1-2-32

DRG. No 12/29B

THE HONGKONG ELECTRIC Co LTD

DRG. No 12/29B

DRAWN BY S K Wong TRACED BY S K Wong

CHECKED BY DATE 8 29

machines whereby a record is kept of the total amount of coal sent to the bunkers.

After being weighed the trucks pass to a mechanical mixer which consists of two belt conveyors, one handling anthracite and the other bituminous coal.

The speed of the belts is adjusted according to the proportion of mixture required.

This conveyor discharges through a rotary star filler into a 40 ton per hour gravity bucket elevator which deposits the coal either into the mixed coal storage bunkers holding 1,200 tons, or into the hoppers above the boilers in No. 1 boiler house.

The mixing of coal required for No. 2 boiler house is carried out in a mixing pit situated above another rotary star filler feeding a 60 ton per hour elevator.

This elevator discharges on to an 18-in. belt conveyor which in turn serves the hoppers of boilers in No. 2 boiler house.

Boiler Plant

Twelve boilers are at present installed, with a total normal evaporation capacity of 457,000 lb. per hour. Details of the boiler plant are as follows:—

No. 1 Boiler House.—Seven Babcock & Wilcox C.T.M. 25,000 lb. per hour normal rating, equipped with superimposed Babcock & Wilcox steel tube economisers, and in the case of five boilers, Babcock & Wilcox chain grate stokers operating on induced draught. The other two units are fitted with Underfeed Class "A" balanced draught stokers.

One Babcock & Wilcox C.T.M. 32,000 lb. per hour normal rating with superimposed Babcock & Wilcox steel tube economiser and Babcock & Wilcox chain grate stoker working on induced draught.

An "Atritor" unit coal pulverising plant having a capacity of 2,000 lbs. of coal per hour is installed for use with this boiler, and functions as a booster.

No. 2 Boiler House.—Two Babcock & Wilcox C.T.M. 50,000 lb. per hour normal rating with superimposed economisers and Babcock & Wilcox style 21 compartment type stokers.

The foregoing ten boilers generate steam at 200 lb. per sq. in. with a final temperature of 600 deg. Fahr.

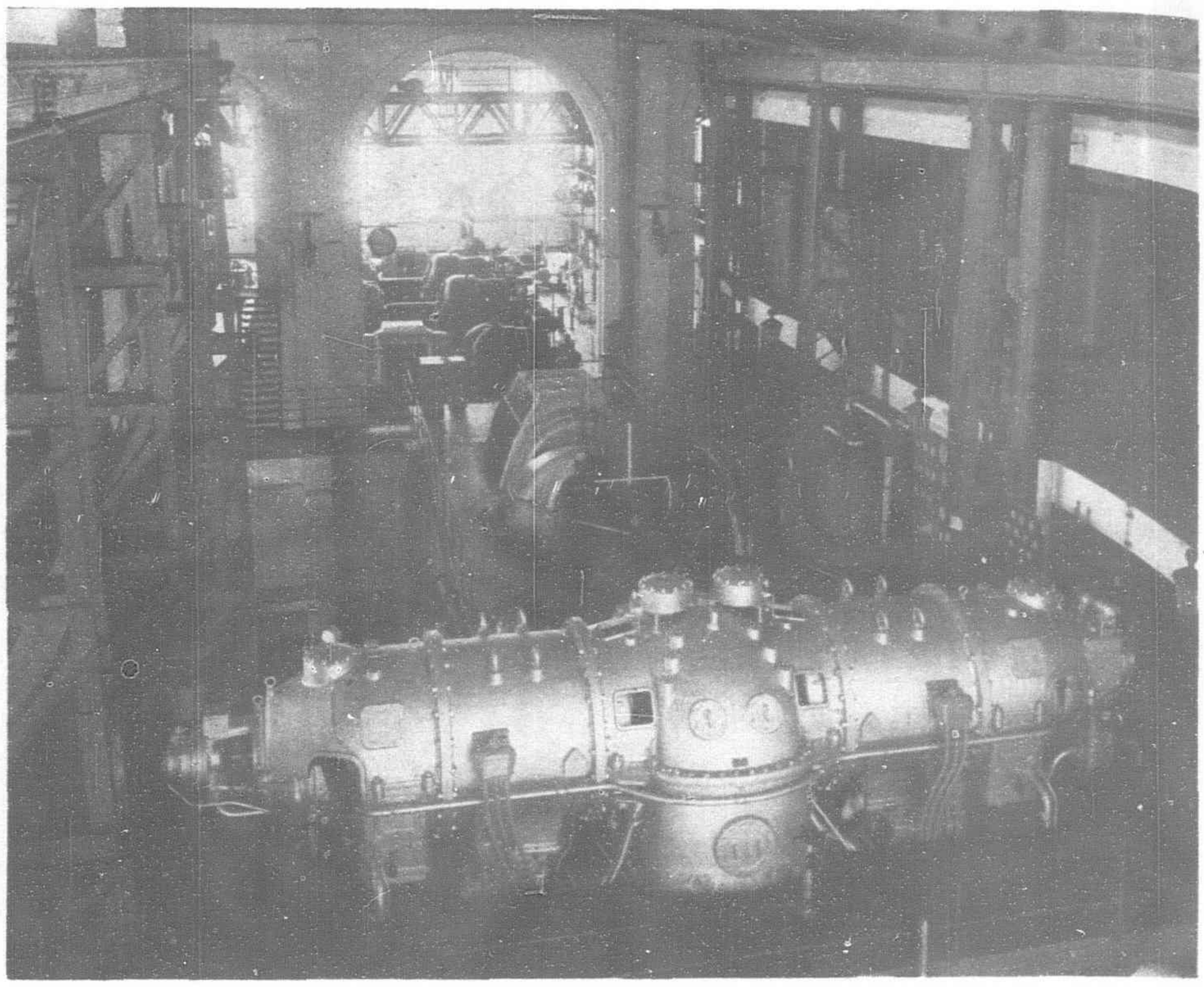


Fig. 3.—Showing No. 7 Brush-Ljungstrom 12,500 kw. Set

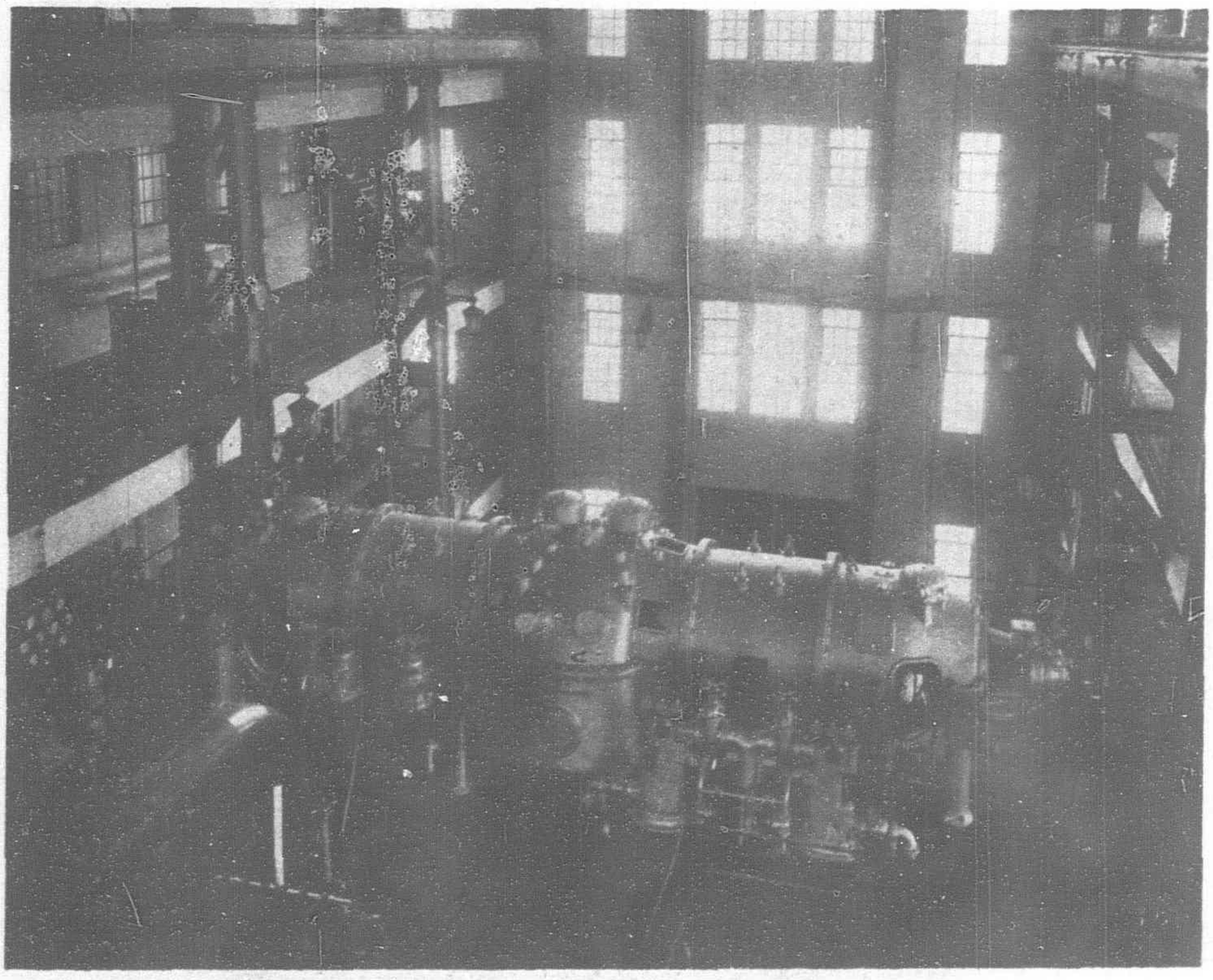


Fig. 4.—No. 7 Brush-Ljungstrom 12,500 kw. Set

Two Stirling tri-drum boilers 75,000 lb. per hour normal rating, operating at 425 lb. per sq. in. steam pressure and 775 deg. Fahr. final temperature equipped with underfeed type L stokers, Foster economisers Howden Ljungstrom air preheaters. Provision is made for these two boilers to supply steam to the 200 lb. per sq. in. range through a reducing valve and desuperheater.

The control of the induced and forced draught fans on the Stirling boilers is carried out through Vulcan-Sinclair hydraulic couplings. One chimney serves each pair of boilers, the last two chimneys installed are lined with cement over Hyrib reinforcing metal. Davidson's grit arresters are incorporated in these two chimneys.

Ash Handling

Ashes from the boilers in No. 1 boiler house are dealt with by two underfeed stoker drag link conveyors, and in No. 2 boiler house by two Babcock & Wilcox 16-in. belt conveyors. The conveyors discharges into tipping trucks outside the station wall, the contents of which are elevated by means of a skip hoist into a storage bunker situated on the sea front, and are then removed daily by junk.

Feed Pumps

The boiler feed water pumps are located on a gallery in the No. 2 turbine house and for the 200 lb. system consist of two "Weir" steam driven centrifugal 20,000 g.p.h., one "Holden & Brooke" 20,000 g.p.h. electrically driven and one 10,000 g.p.h. Mather & Platt electrically driven pumps.

For the 400 lb. plant the pumps at present installed are one "Weir" steam driven centrifugal 12,000 g.p.h., one Mather & Platt 12,000 g.p.h. and one Mather & Platt 15,000 g.p.h., both the latter being electrically driven. The feed system is closed and in order to reduce the oxygen content to a minimum when running the older machines in No. 1 turbine house, a "Weir" optimum deaerator is installed.

Turbine Plant

The installed turbo plant capacity is 39,000 kw. The machines generate at 6,600-volts

three-phase, 50-cycles, 3,000 r.p.m. Particulars of the various sets are as follows with dates installed.

No. 1 Turbine House.—

No. 2 machine	1,500 kw.	B.T.h.	1920
„ 3 „	5,000 kw.	English Electric	1921
„ 4 „	5,000 kw.	English Electric	1922
„ 5 „	5,000 kw.	B.T.h.	1924

No. 2 Turbine House—

No. 6 machine	10,000 kw.	B.T.h.	1929
„ 7 „	12,500 kw.	C.M.R. Brush-Ljungstrom	1932

Steam conditions for machines Nos. 2-6 are 190 lb. per sq. in., final temperature 570 deg. Fahr. and for No. 7 machine 400 lb. per sq. in., 750 deg. Fahr.

Air and condensate extraction plant is in duplicate on all but the 1,500 kw. machine.

Steam is bled from No. 6 turbine and passes to a heater and low pressure evaporator, the temperature of the condensate being raised to 170 deg. Fahr.

The Brush-Ljungstrom machine is fitted with three feed heaters, the first taking steam from glands and ejectors, the second from the turbine at 8.6 lbs. to 21 lbs. absolute and the third takes the vapor from the evaporator which is supplied with bled steam at 42 lb.—100 lb. absolute, resulting in a final condensate temperature of 197 deg. Fahr. The condensers are surface two pass type with the exception of the Brush-Ljungstrom which is a single pass Delas Ginabat type. Condensing water passes through "Merrill" and "Bailey & Jackson" strainers.

Circulating Water System.—The circulating water pump house contains four pumps driven by vertical motors through extension shafts, the center of the pump suctions being situated approximately 20 feet below the pump house floor level, which ensures that at low water level, spring tides, the pump intakes are flooded.

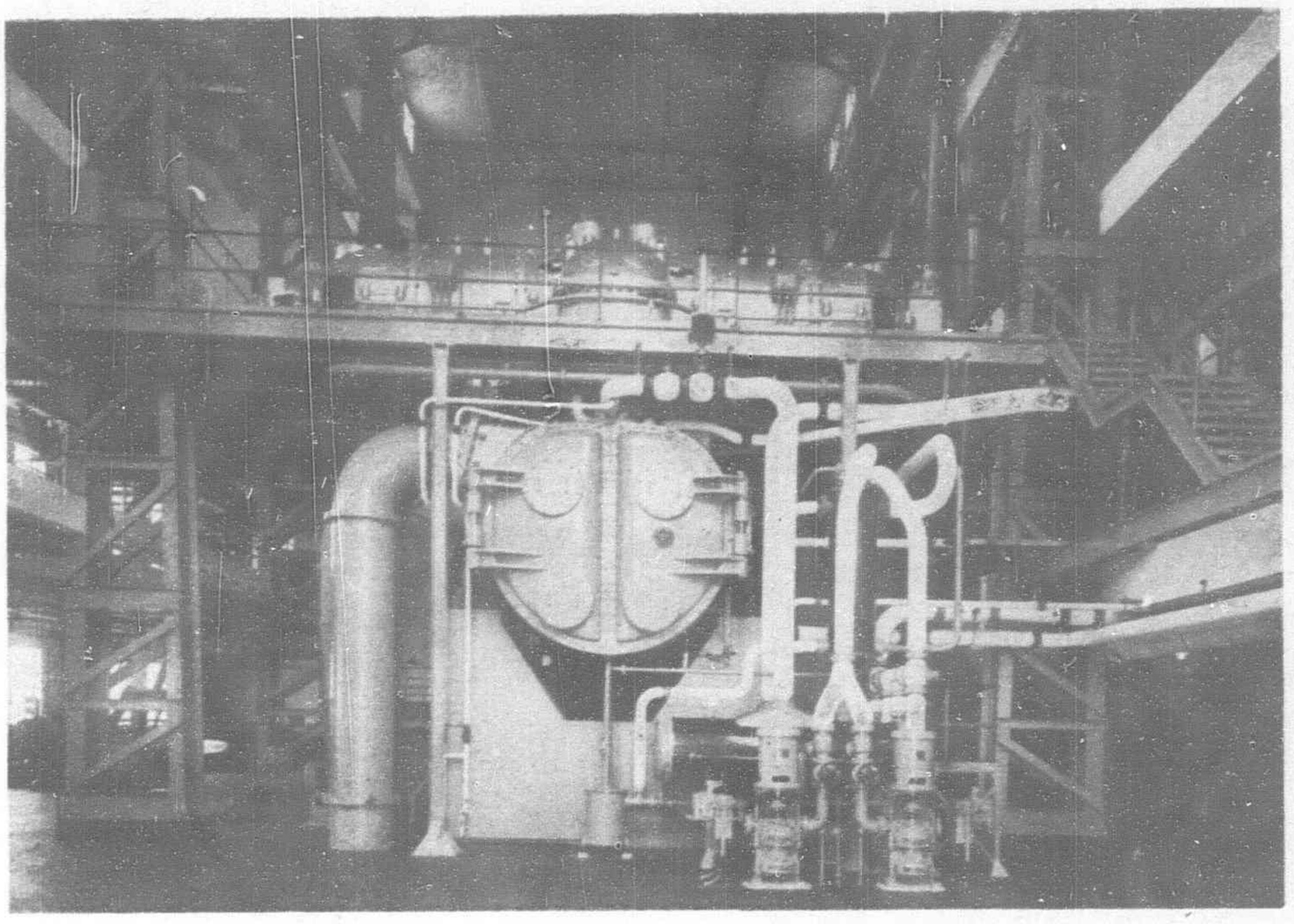


Fig. 5.—No. 7 Brush-Ljungstrom 12,500 kw. Set

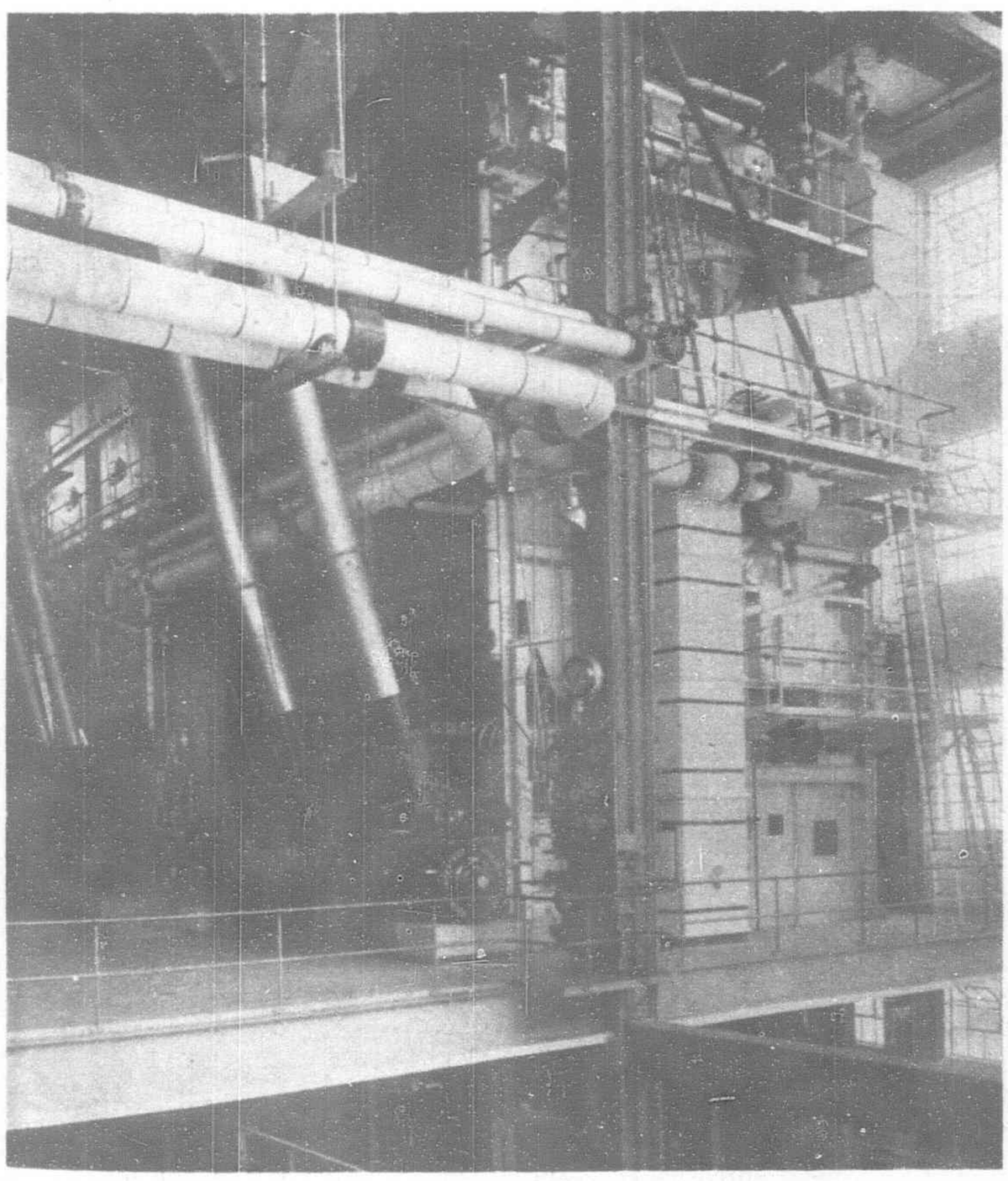
The following pumps are installed :—

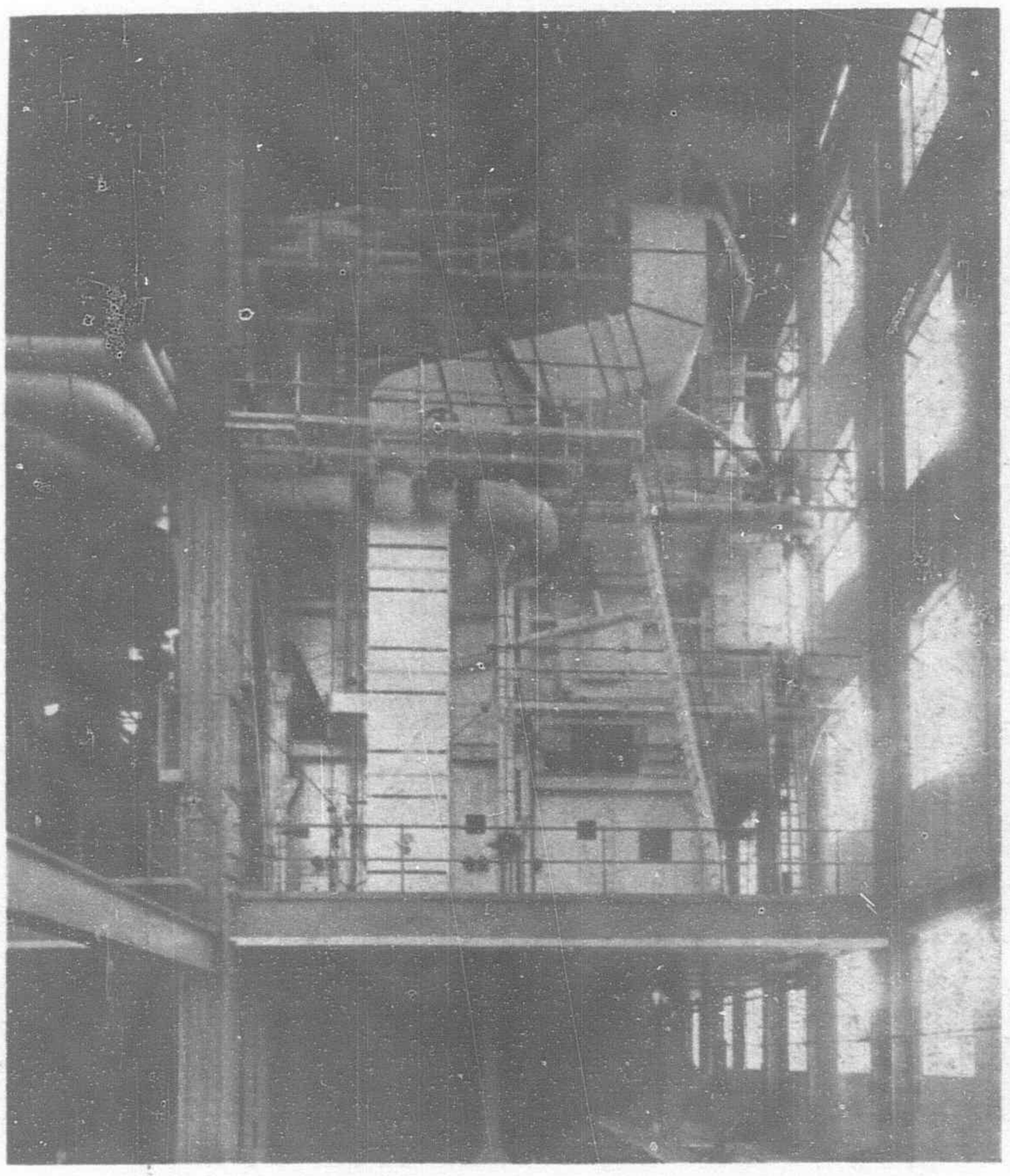
No. 1	12,000 g.p.h.	30-ft. head	W. H. Allen Sons & Co., Ltd.
„ 2	15,000 g.p.h.	50-ft. head	„ „
Nos. 3 and 4	12,000 g.p.h.	50-ft. head	„ „

Nos. 1, 3 and 4 pump motors derive their energy from a low tension Ferguson, Pailin switch-board supplied by two 350 kva Ferranti transformers controlled on the high tension side by British Thomson-Houston metalclad switchgear.

No. 2 pump motor is connected to a separate transformer of 280 kva capacity.

A "Waller" screen protects the intake from the sea.





Figs. 6 and 7.—Nos. 11 and 12 Stirling 75,000 lb./hr. Boilers

The pumps deliver *via* two pipe lines, one 42-in. diameter and the other 36-in. diameter, the two lines being interconnected.

Each condenser discharges into its individual sump well, the end of the pipe being submerged to produce a syphonic effect.

MAIN SWITCHGEAR.—The main E.H.T. switchgear Fig. 9 is composed of 21 Reyrolle metalclad B4 type electrically remote controlled switch units, having a rupturing capacity of 350,000 kva.

The normal current rating of the generator switches is 1,600 amperes and 800 amperes for feeder switches. "Chadburn" type electric signalling gear is installed for transmitting orders from the control room to the turbines. Generator protection consists of Merz-Price current balance and overload. Feeders are protected by overload and earth leakage.

A "Telechron" master clock is installed in the Control Room Fig. 10 for the purpose of checking frequency in connection with electrically operated clocks throughout the system.

AUXILIARY D.C. SUPPLY.—Direct current for operating protective relays, switch unit solenoids and emergency lighting is furnished by one 15 kw. De Laval 400 lb. per sq. in. turbo dynamo, one 20 kw. Belliss & Morcom 200 lb. per sq. in. turbo dynamo, one 15 kw. Petter oil engine driven dynamo and one 15 kw. motor generator set.

LABORATORY. — A well equipped laboratory carries out coal, water and oil testing also checking and calibration of instruments and gauges when necessary.

WORKSHOP AND STORE.—The main workshop and store is situated adjacent to the Power Station, and includes a foundry dealing with iron and brass castings.

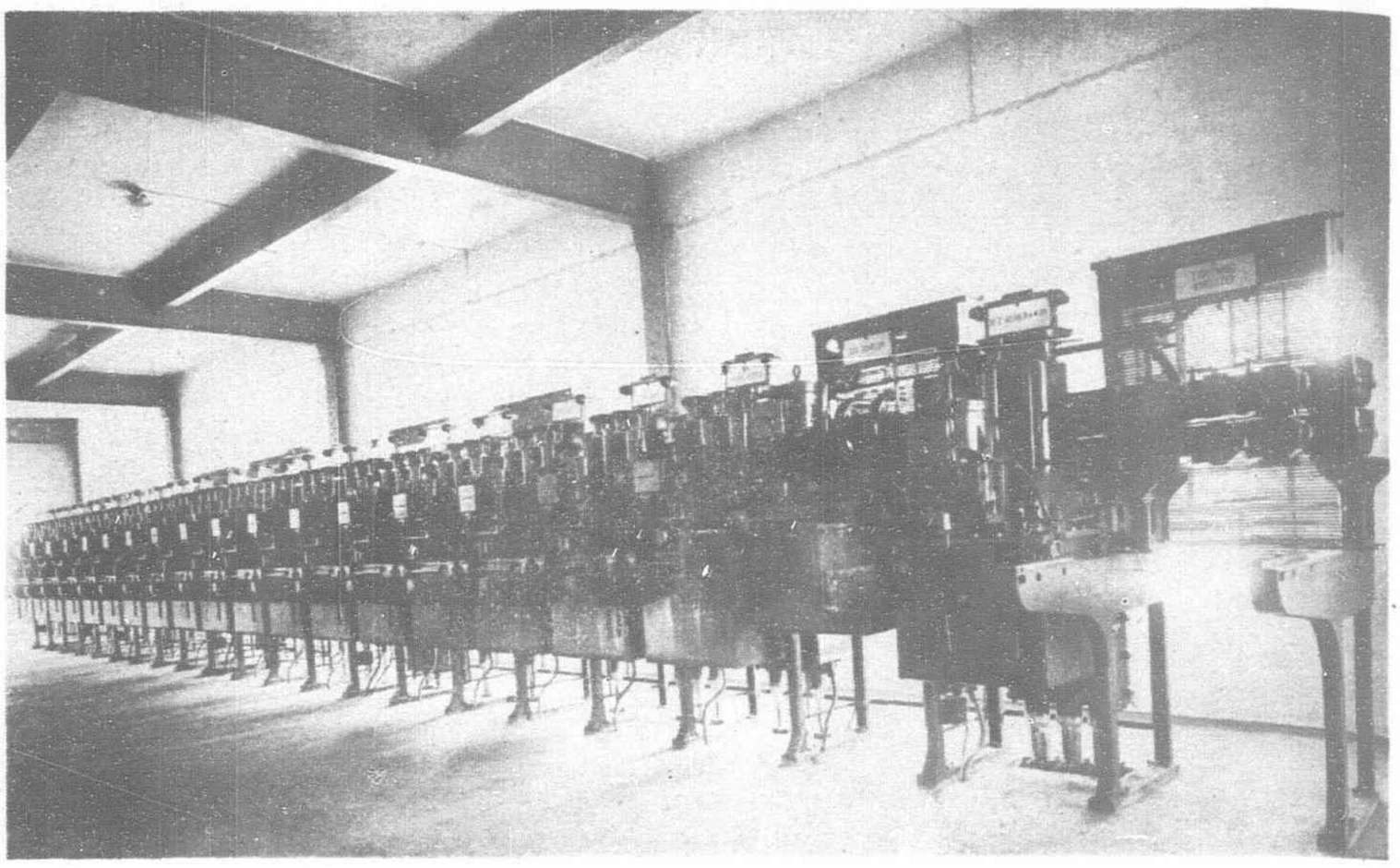


Fig. 9.—Reyrolle Main Switch-board

Distribution System

In the early days of the Company distribution was by overhead lines with house to house transformers.

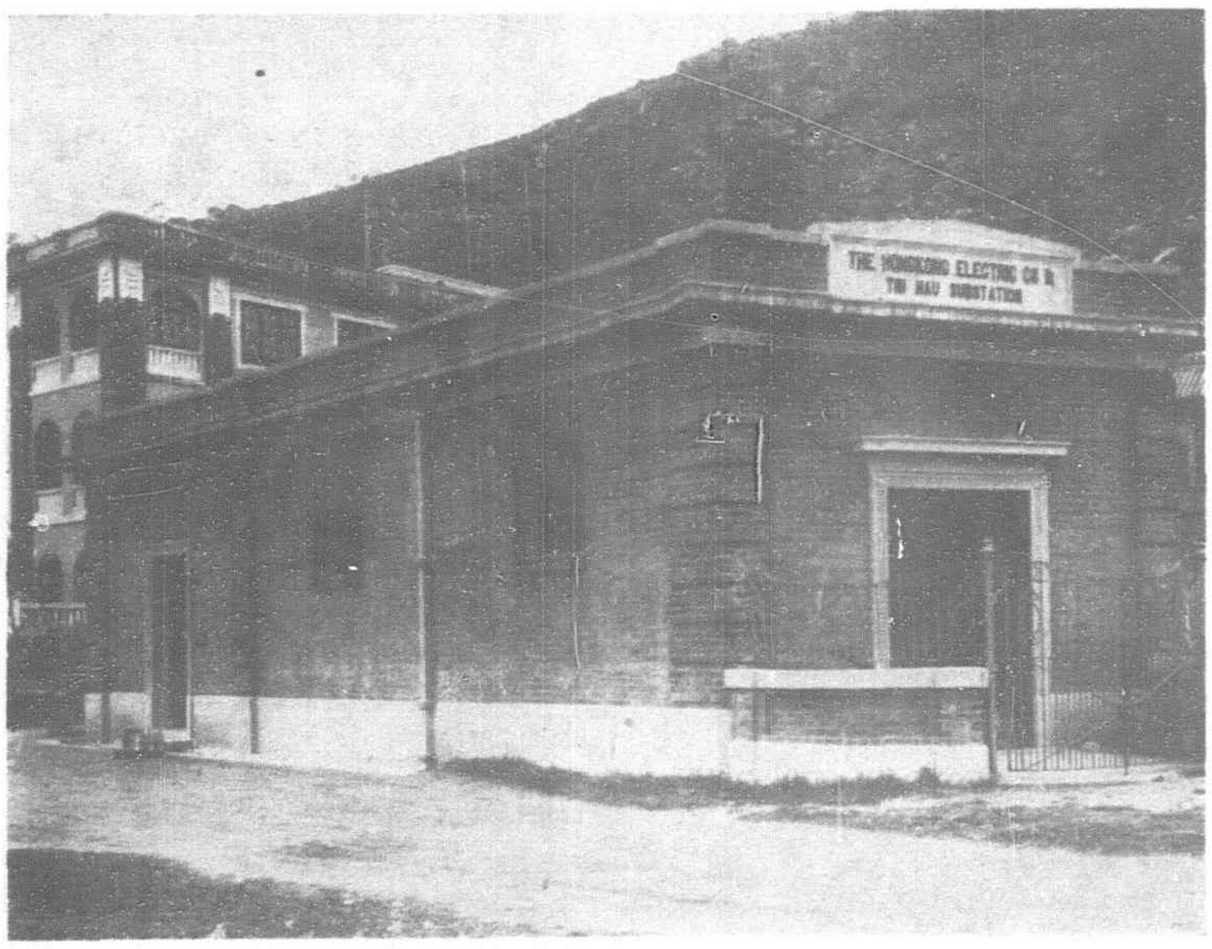


Fig. 11.—Tin Hsu Substation

The first underground cable was laid about 1900, but it was not until 1906 that the replacement of overhead lines was undertaken on a large scale. In that year three 0.1□". C./C. vulcanized bitumen cables were laid as 2,000-volt feeders from the Wanchai Works to the center of the City and a three wire distributing network at 200/100-volts consisting mostly of 0.1□". triple concentric cable was laid throughout the center of the City, transformer and fuse gear being housed in kiosks. These networks were gradually extended and duplicated as the load increased until 1915 when it was decided to change to 50-cycle and 6,600-volt generation with distribution at 350-volts, three-phase, four wire. Owing to the war very little progress was made with the work until 1921 but in that year a commencement was made with the replacement of the whole of the low tension network by a system of four core distributors, mostly 0.25□"., fed from substations.

The change of consumers' lamps, fans and appliances from 100-volt, 75-cycles, to 200-volt, 50-cycles, and motors from 200-volt, 75-cycles, one-phase, to 350-volt, 50-cycles, three-phase, thus became necessary and this work was carried out between 1921 and 1924. The total cost was nearly $5\frac{1}{2}$ lacs of dollars and meant the rewinding of some 15,500 fans, the free gift of nearly a quarter of a million electric lamps, the conversion or exchange of 3,400 appliances and the reconstruction of 16,000 meters.

Substations in the more thickly populated areas were designed for an ultimate capacity of 3,000 kw. each and in the outlying districts of 500 kw. each. A typical substation is shown in Fig. 11.

DISTRIBUTION.—Owing to the shape of the City of Victoria the large substations are spread out along a more or less straight line. Separate 6,000-volt feeders are run to each of these substations from the generating station and each is

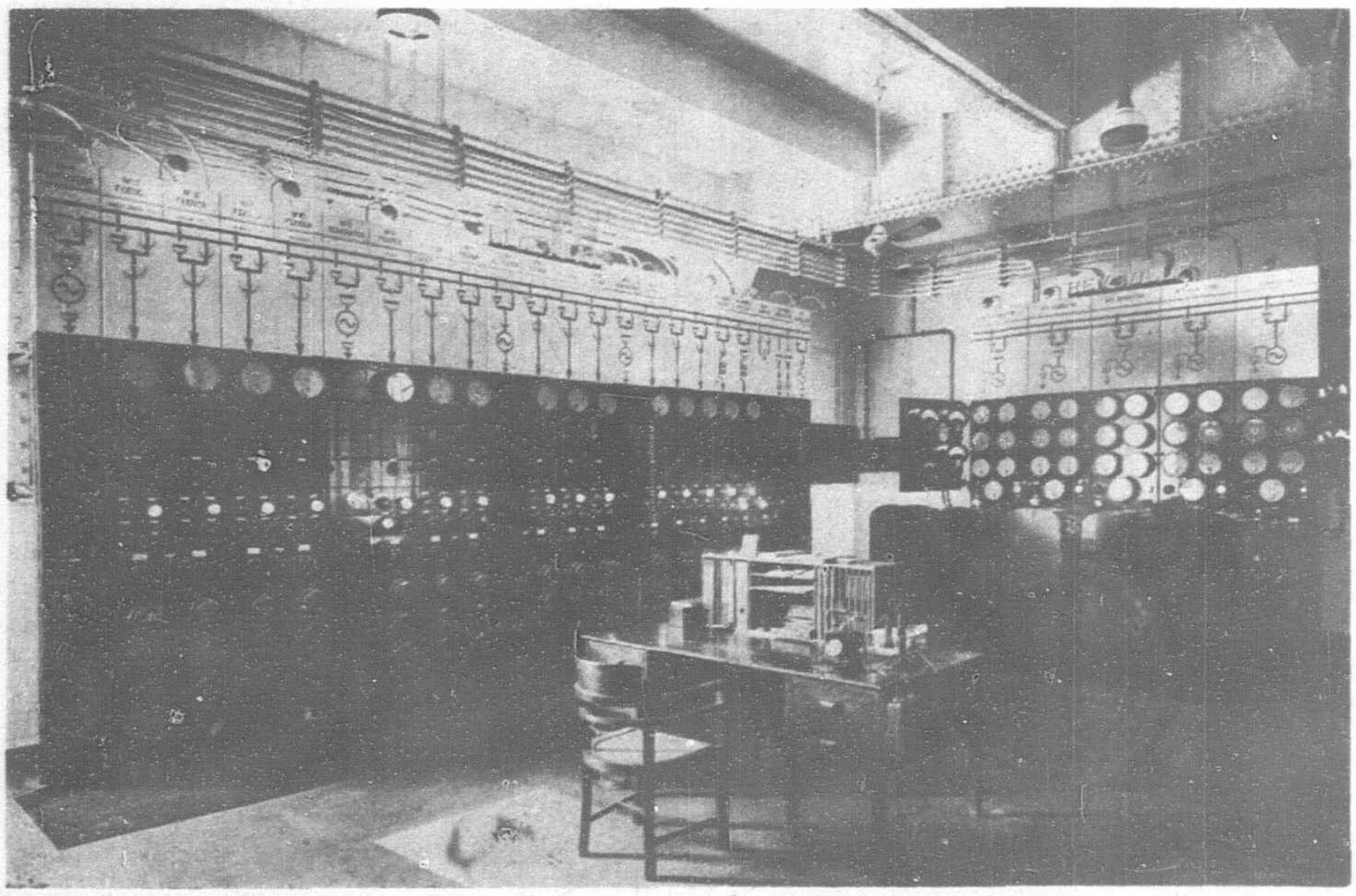


Fig. 10.—Control Room, North Point

connected to the two adjacent substations. These connecting links are ordinarily open at one end so that the feeders are normally operated separately but an alternative supply is available in each substation so that if a feeder fails the interruption to the supply is reduced to a minimum. With the exception of a few of the more remote substations, the smaller substations are supplied from ring mains from the larger, these ring mains being normally operated "broken."

Transformers of 750 kva capacity are used in the large substations, 250 kva and 100 kva in the smaller substations and 50 kva, 20 kva and 10 kva in kiosks in the country districts.

At the end of 1931, the Company had 23 substations, 19 kiosks and about 63 miles of high tension feeder and 110 miles of low tension distributors in operation.

In order to ensure rapid and certain communication the Company has its own automatic telephone system operated from an exchange situated at the North Point Workshop Building to which all offices, substations and senior engineers' residences are connected by underground cables.

The Company supplies 500-volt D.C. current to the Hongkong Tramways Ltd. by means of four—250 kw. rotary converters and one 500 kw. motor generator and 6,600-volt, three-phase, current to the Peak Tramway Company.

There are 75 direct current lifts in the center of the City, the current for which is generated by two—100 kw. and one 70 kw. motor generators, but it is the Company's intention not to extend this service and no new lifts are accepted for connection to the Company's D.C. distributor system.

Meter Department

The Company's Meter Department which is housed in the center of the City is fitted with the most up-to-date equipment for repairing and testing meters ; at the beginning of 1932 there were about 37,000 meters in service.

In 1930 the Hongkong Government introduced legislation which compels Supply Companies to test and inspect every installation which is connected to their mains at least once every five years and this has entailed the employment of a special staff of inspectors and clerks.

The Company's Showroom consists of spacious premises situated on the main throughfare of the City where consumers can call for advice and where makers of apparatus may exhibit their wares.

Shensi's Oil Resources

SHENSI, which in recent years has been the scene of much sufferings and calamities in the form of famines, epidemics and banditry, will yet prove to be one of China's most prosperous provinces when its inexhaustible store of mineral resources, most of which are still untouched underground, come to be developed and made use of.

The province is especially rich in petroleum oil, and it has one field the content of which according to estimate is especially rich. This oil field is in the northern part of the province, or, to be exact, in the district of Yenchang, and has an area of more than 1,000 square miles in extent.

The first rough survey of the whole field was made by a German expert as early as 1884. But nothing was done until eight years later when the first organized attempt at its development was made by a private Chinese firm, in which there was also some German interest. But not long after its formal establishment, the company was dissolved upon order of the provincial authorities on the ground that the petroleum was property of the state and would be worked by the government as such.

In 1905, an imperial edict was obtained, authorizing official extraction of the rock oil, besides designating a sum of money as initial expenditures. Consequently, work began in the field in a small scale. The first few gallons of the petroleum thus obtained were sent over to two Japanese chemists in Hankow for analysis in order to ascertain its quality. The result turned out to be exceedingly satisfactory. The oil proved to be more brilliant in combustion and at the same time giving out less smoke than the ordinary rock oil.

In the spring of 1909, the provincial government of Shensi desided to invest 270,000 taels in the oil company, which immediately embarked on an elaborate extension program. The service of a Japanese mineral expert was obtained by the company to make a detailed study of the possibilities and also to design measures for their realization.

Unfortunately, however, all plans for the development of the oil field on a grand scale were denied every possible chance of a trial because of the subsequent political chaos in the country. The company had to drag along through thick and thin until 1929 when it was instilled with a new hope by the decision of the provincial government of Shensi to back up the enterprise.

The provincial government started by appointing a special director-general to look after the enterprise and at the same time, trying to lay down practicable plans for the development of this particular oil field. But the dwindled purse of the provincial government as a result of the natural calamities in the province in recent years has not been able to do very much in the way of realizing the full development of the oil resources.

The company now working on the field is named the Yenchang Petroleum Company. It has two factory premises, both outside of the city of Yenchang. The first one houses the refining and storage department while the second one is concerned with the digging of oil wells and the extraction of petroleum from the earth pit.

The whole company is under the supervision of the director-general appointed by the Shensi provincial government. The company is manned by a rather small staff, while workers actually working over the wells do not exceed 100.

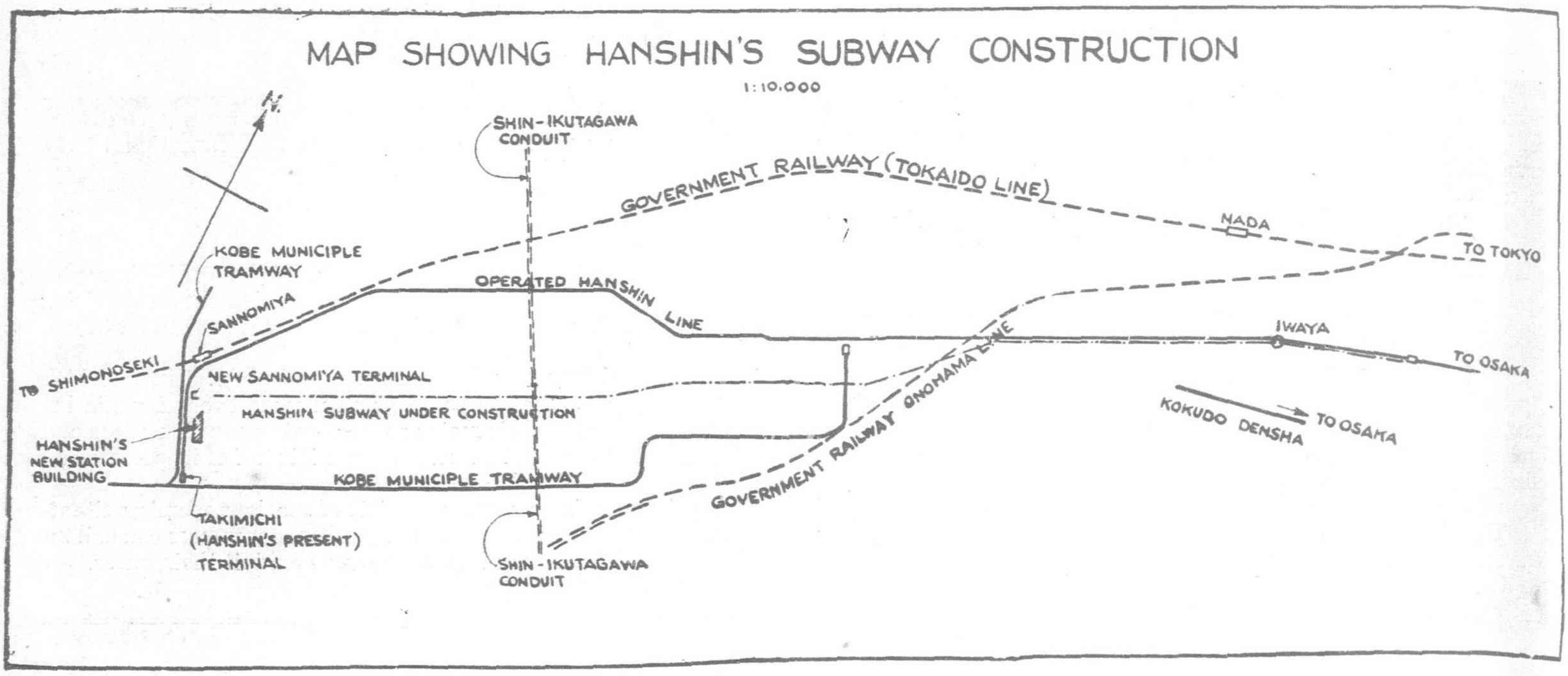
For the time being, there are only few wells, all of which were drilled long ago ; they are turning out every day few thousand gallons of petroleum. The processes involved are also Japanese in character, because the company formerly kept several Japanese technicians in its employment. New wells have been marked to be drilled, but the shortage of funds at present compelled operation on a limited rate and extent. What is more, most of the machines used in extracting and refining the mineral oil were all installed decades ago. This necessarily pulled down the efficiency and speed of the whole process.

Another important factor counting for the slow growth of the enterprise is the lack of communication facilities. Being in the northern part of Shensi, where it is most mountainous in the province. Yenchang is deprived of any railway connections. Oil produced by the company has to be transported on the backs of camels and mules to a great distance at an almost prohibitive cost. Chiefly because of this setback, the petroleum from Yenchang, however high in grade it may be, has rarely travelled to distant parts and was never consumed in large quantities.

The Bureau of Construction of the Shensi Provincial government has recently laid down a new plan practicable under the present circumstances for the development of the Yenchang oil field.

First of all, it was decided, more emphasis than ever will be paid to investigation and experimentation in the whole process, and more wells will be drilled only in regions where the oil is most abundant. The purchase of new machines, such as refiners, engines, pressure apparatus, pumps and other useful apparatus, chemical analysis and for scientific measurements is another point decided upon in the new scheme.

In addition, special attention will be paid to better the transportation facilities. A special surveyor has been appointed to survey travelling conditions between Yenchang and Sianfu, capital of the province. It was found that the whole line covers a total distance of more than 300 miles. As the proposed road will traverse the mountainous parts of the country, the costs to be involved in paving a motor-car road between these two points will entail as large a sum as $250,000. Then, measures will also be devised to promote the sale of the oil in different parts of the country, especially places adjacent to Shensi, such as Shansi, Honan and other provinces, in central and northwestern China.



Subway Construction in Kobe

By EISABURO KUSANO

THERE are four railways operating between Osaka and Kobe at present. Three of these are double-track electric lines and the other is the four-track steam Government Railway. One of the three former roads, the Osaka-Kobe Electric Railway, generally known as the "Hanshin," is building a 3,000 meter subway at the Kobe end of the line, to be completed early in 1933.

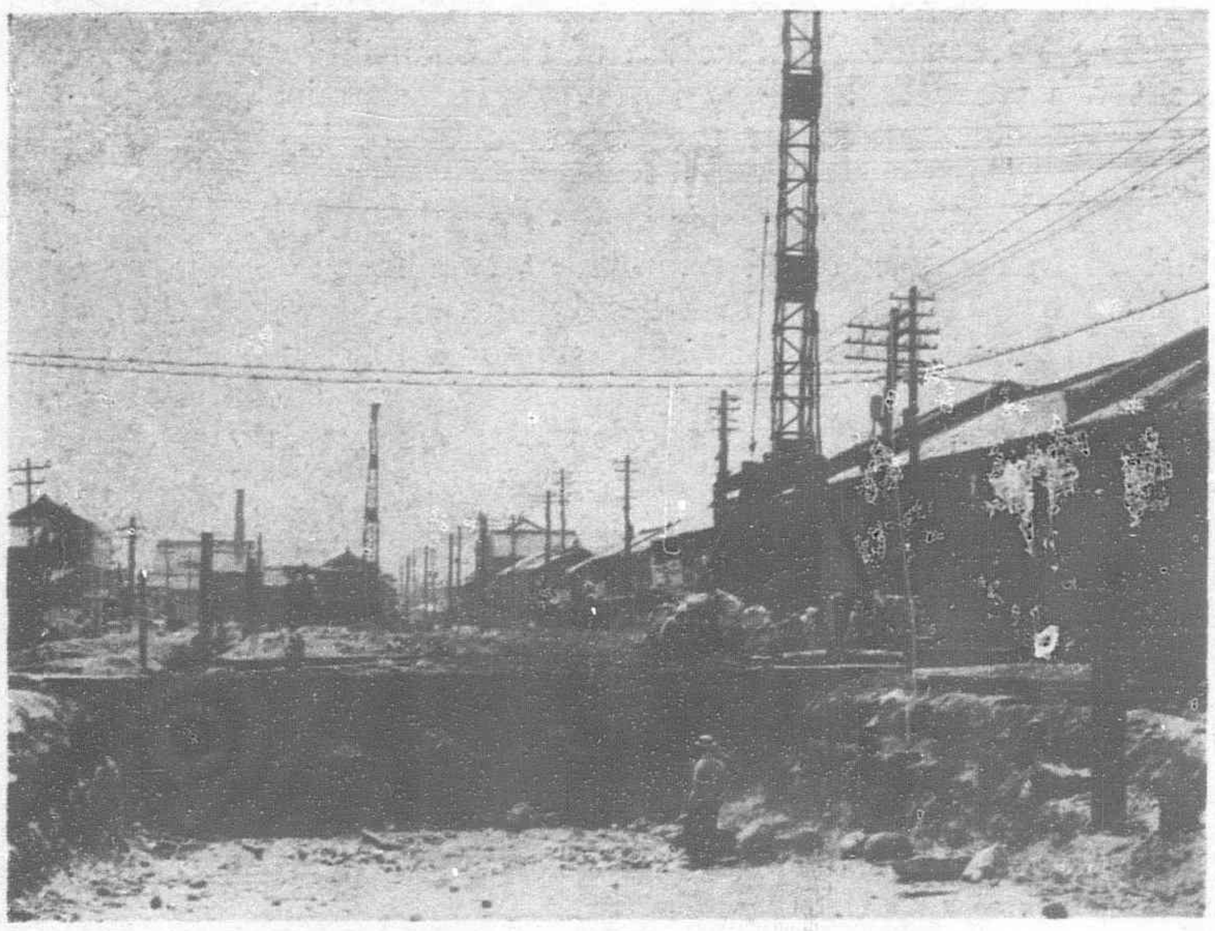
The city of Osaka to-day is situated in the middle of one of the most highly developed railway networks in Japan. Apart from the city's being an industrial and commerical center, it is surrounded by such thriving towns as Amagasaki, Sakai, Kishiwada, and so on, to say nothing of its geographical proximity to Kobe, the Empire's greatest export harbor city. In addition, there are a large number of pleasure resorts, either associated with historical interest or noted for scenic beauty, within easy reach of Osaka, especially those in and around Kyoto and Nara. The interurban lines radiating in all directions with Osaka as their starting point, consequently, are not only industrial and commercial arteries but also are the moving pavilions of holiday makers.

A recent investigation revealed that well over Y.600,000,000 is invested in nine interurban lines connecting Osaka with various cities, these lines including the Hanshin and the Hankyu that run between Osaka and Kobe, the Nankai and the Hanwa between Osaka and Wakayama; the Keihan which operates two lines, local and express, between Osaka and Kyoto; the Sankyu, one of the fastest electric railways of the country, connecting Osaka with Uji-Yamada, the site of the Ise Grand Shrine in Mie Prefecture; and the Daitetsu and the Daiki that operate between Osaka and Nara.

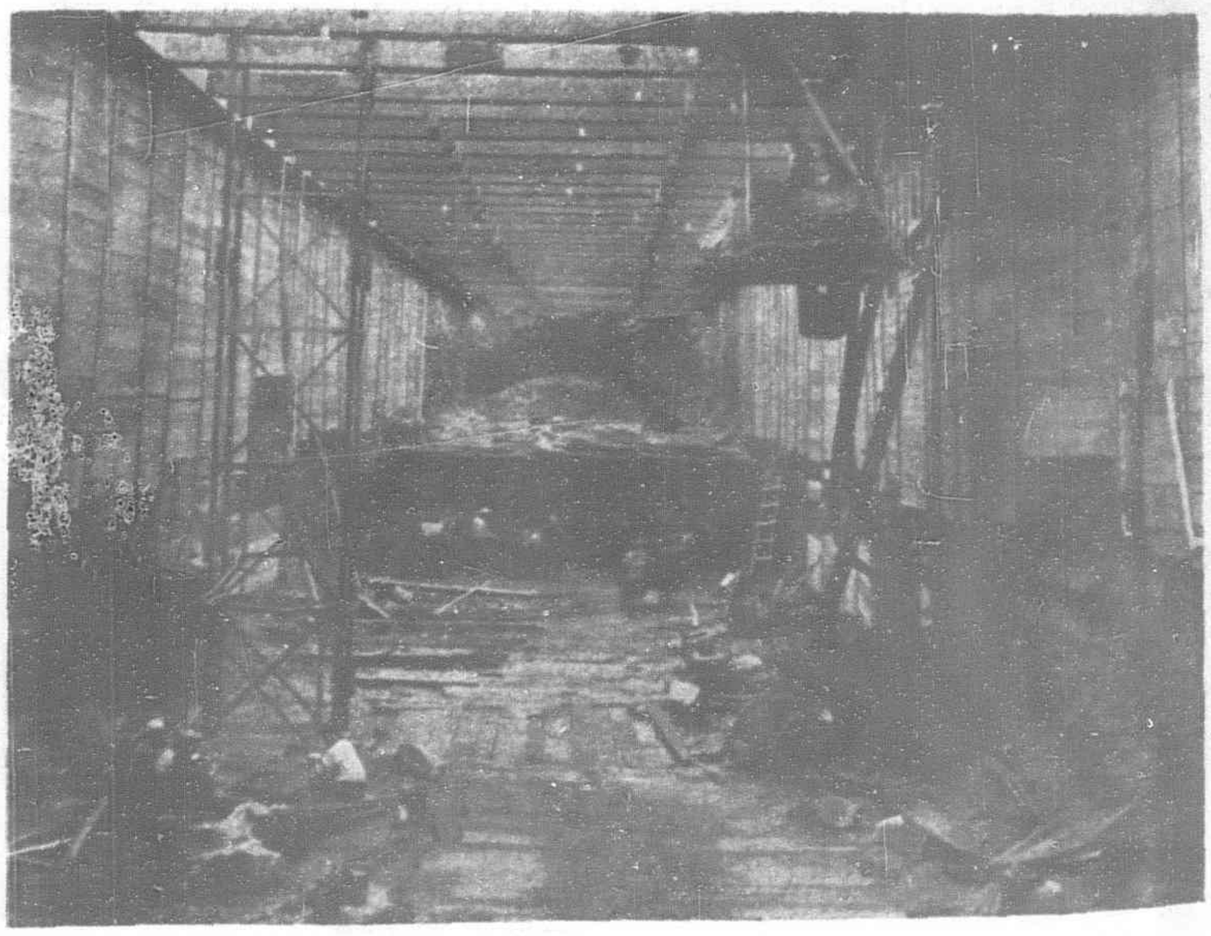
Of this total exceeding Y.600,000,000, the investments in the track and other construction work as well as in the real estate stand at nearly Y.466,000,000.

The combined train operation of five leading companies alone, the Hanshin, Hankyu, Keihan, Daiki, and Nankai, covered almost 30,000,000 miles in a recent semi-annual business term.

In spite of such a remarkable development, however, growing difficulties are in evidence as regards the disposal of the fast increasing volume of traffic by means of the existing facilities for transportation in this particular section of the country. Projects

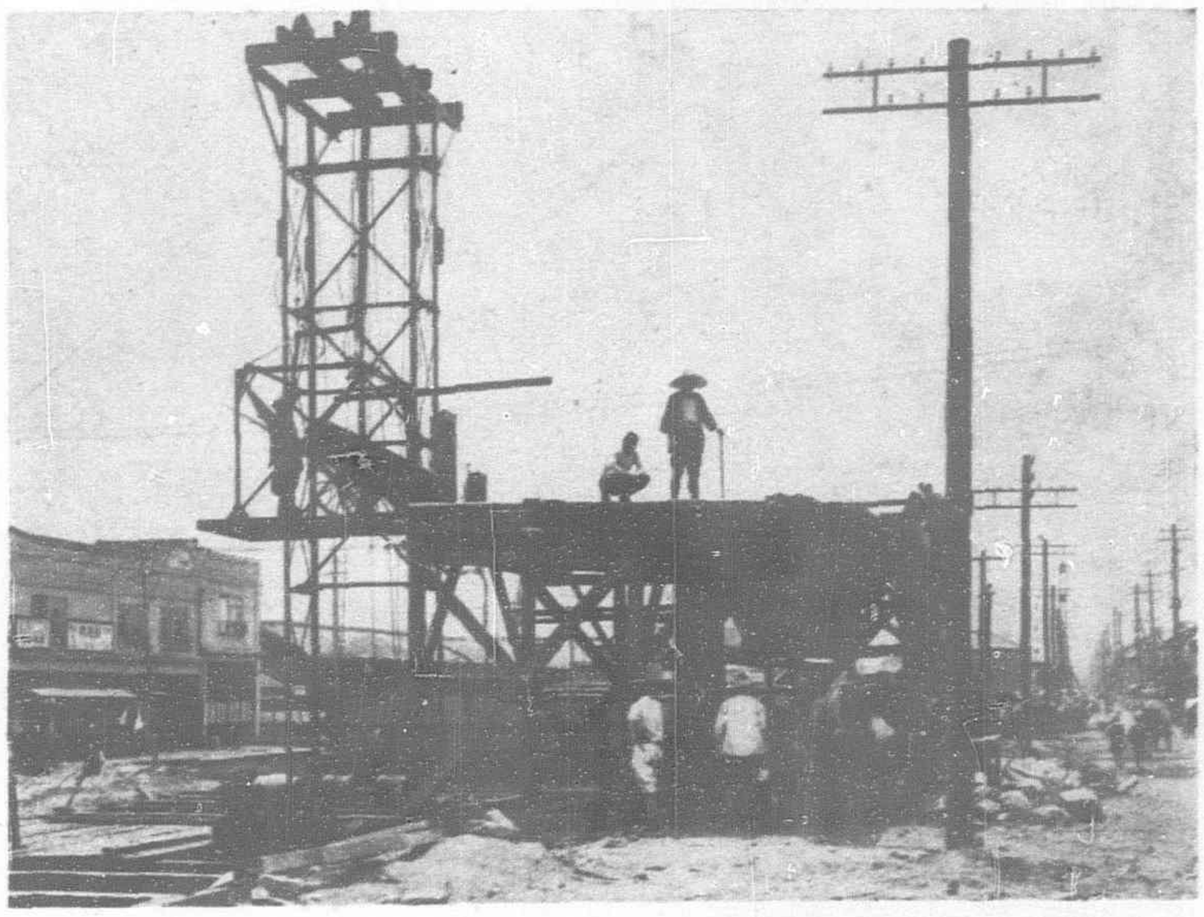


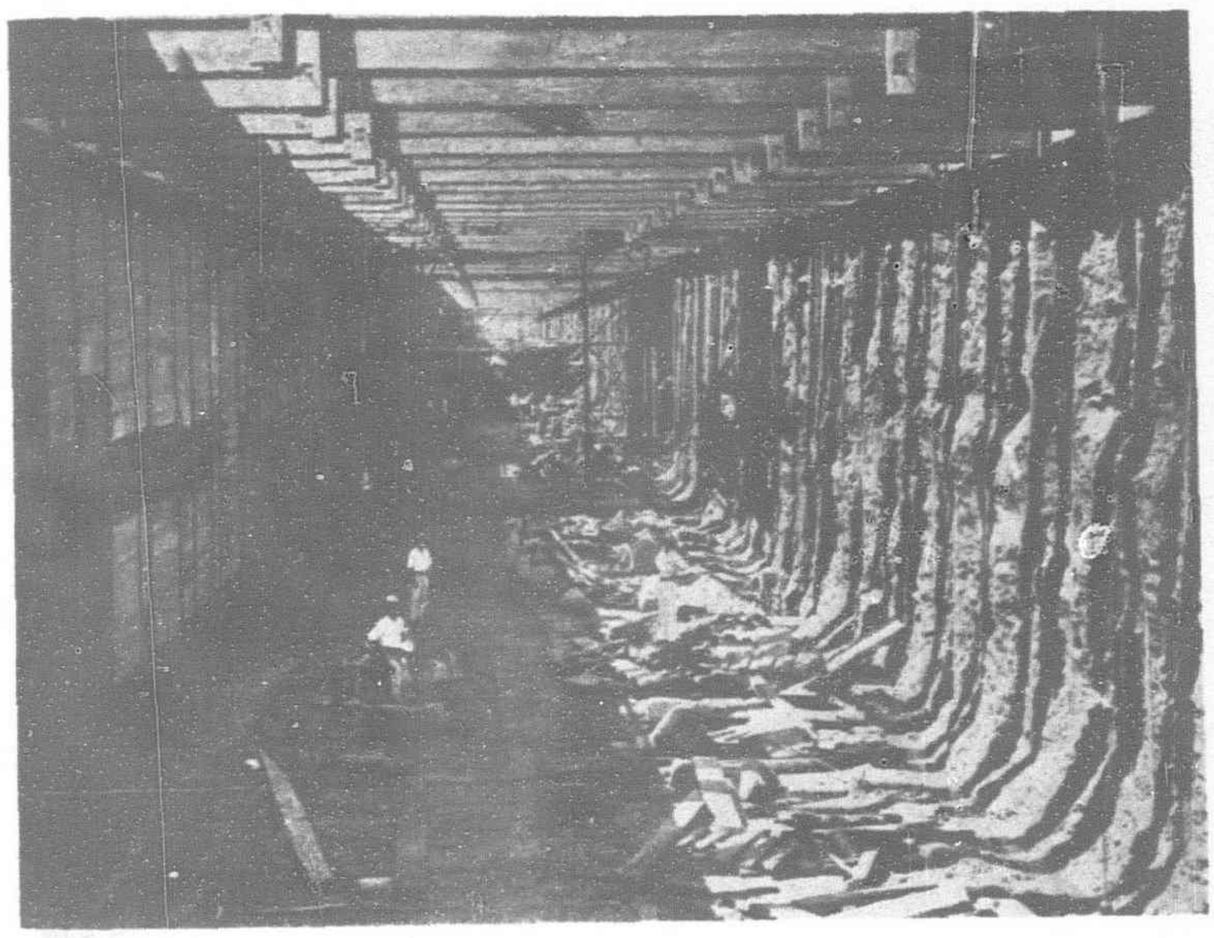
I-Beam driving preliminary to digging

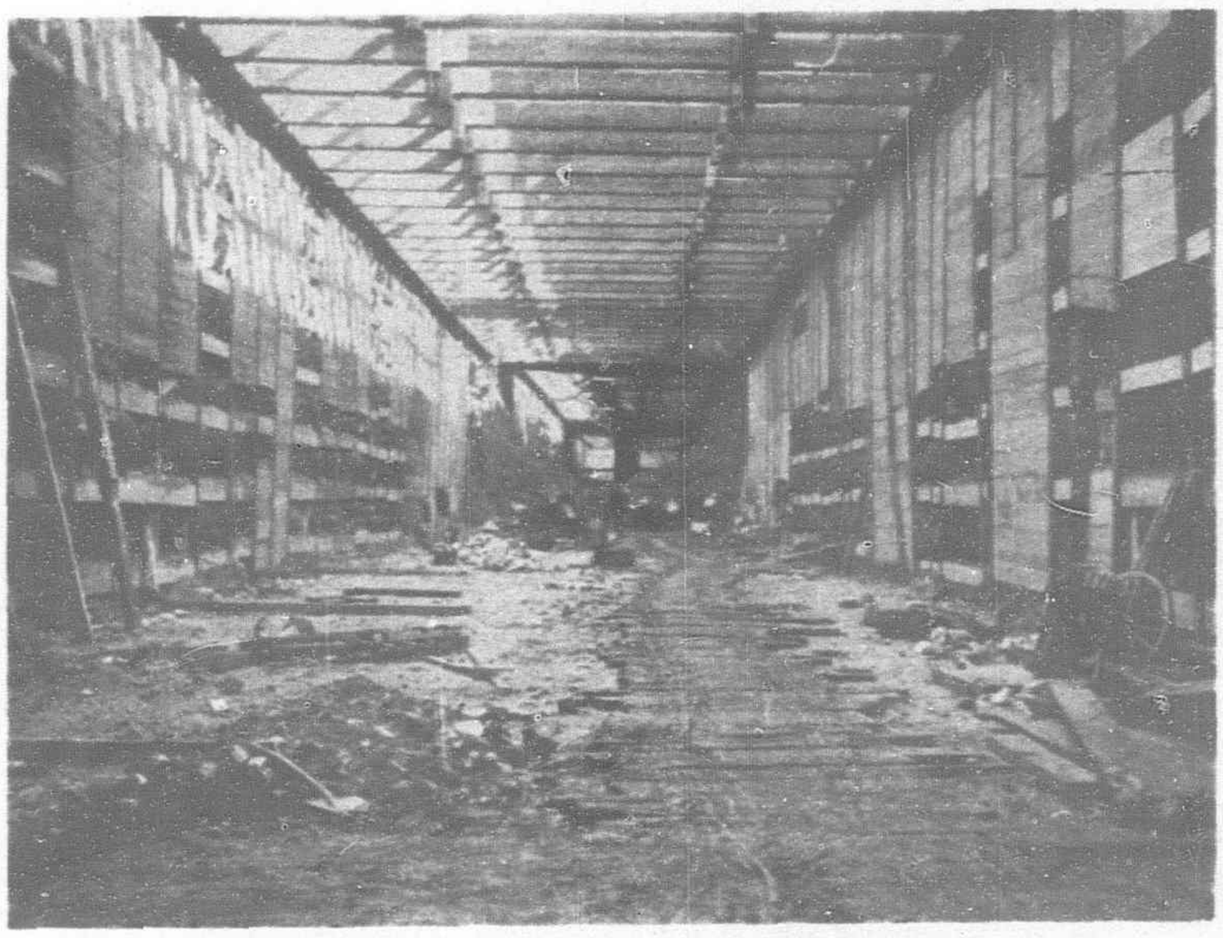


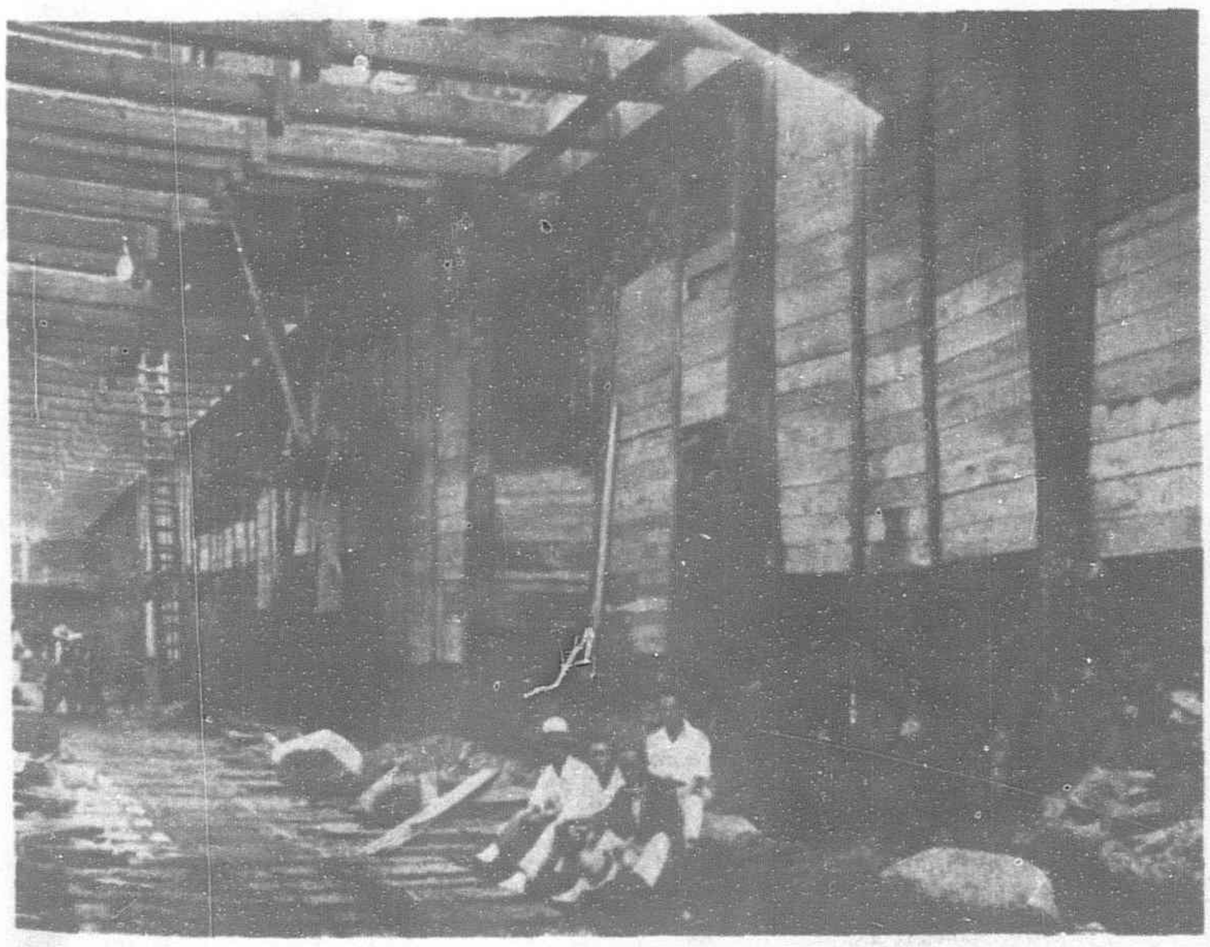
Digging operations

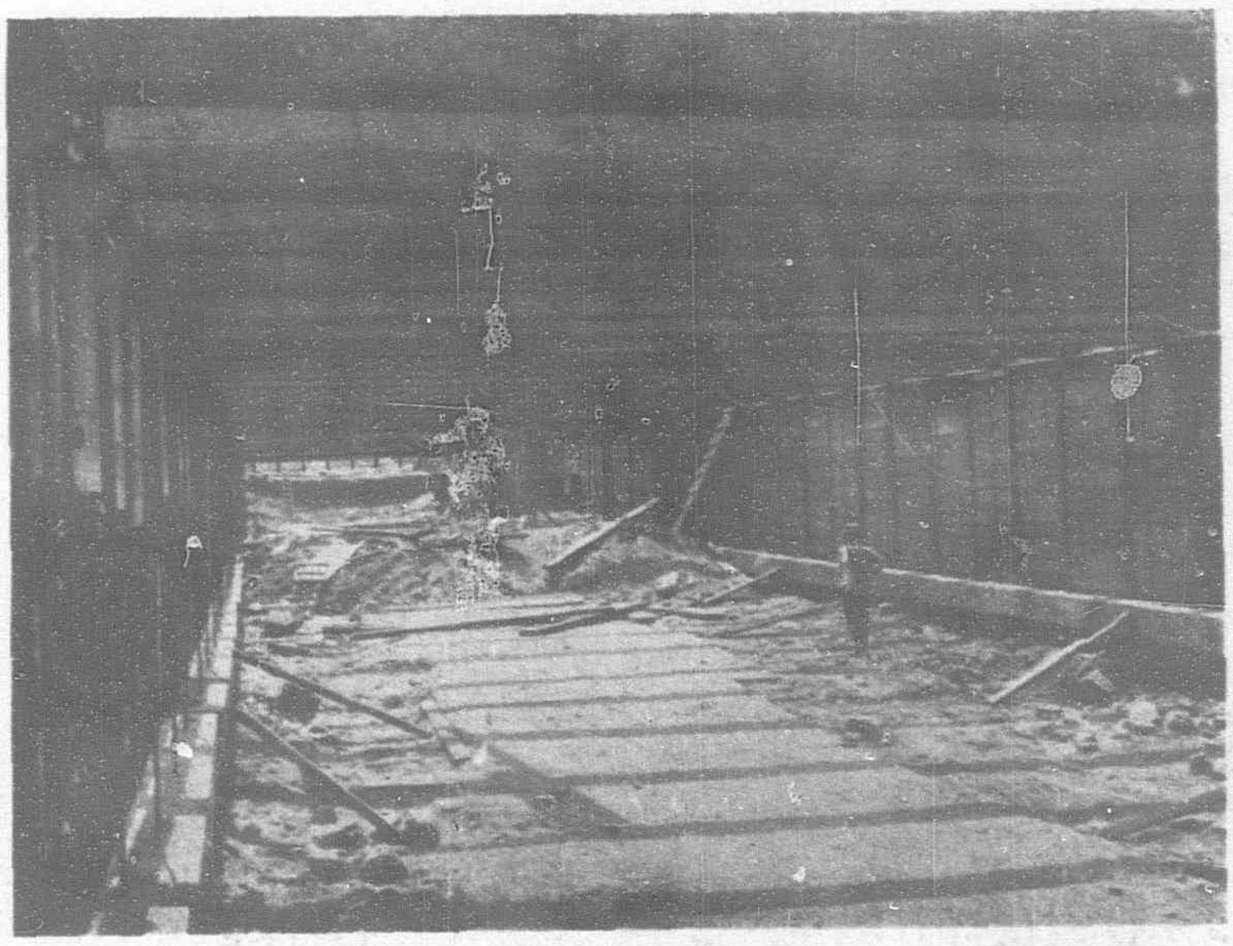
CONSTRUCTION WORK OF NEW SUBWAY AT KOBE



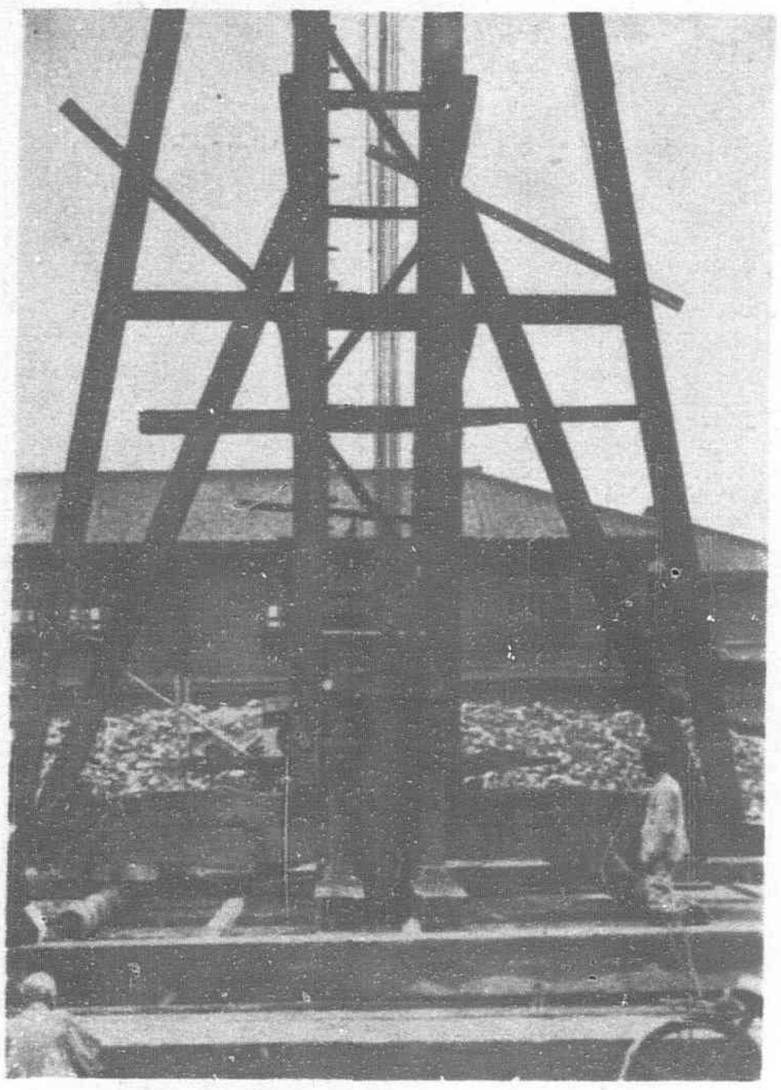




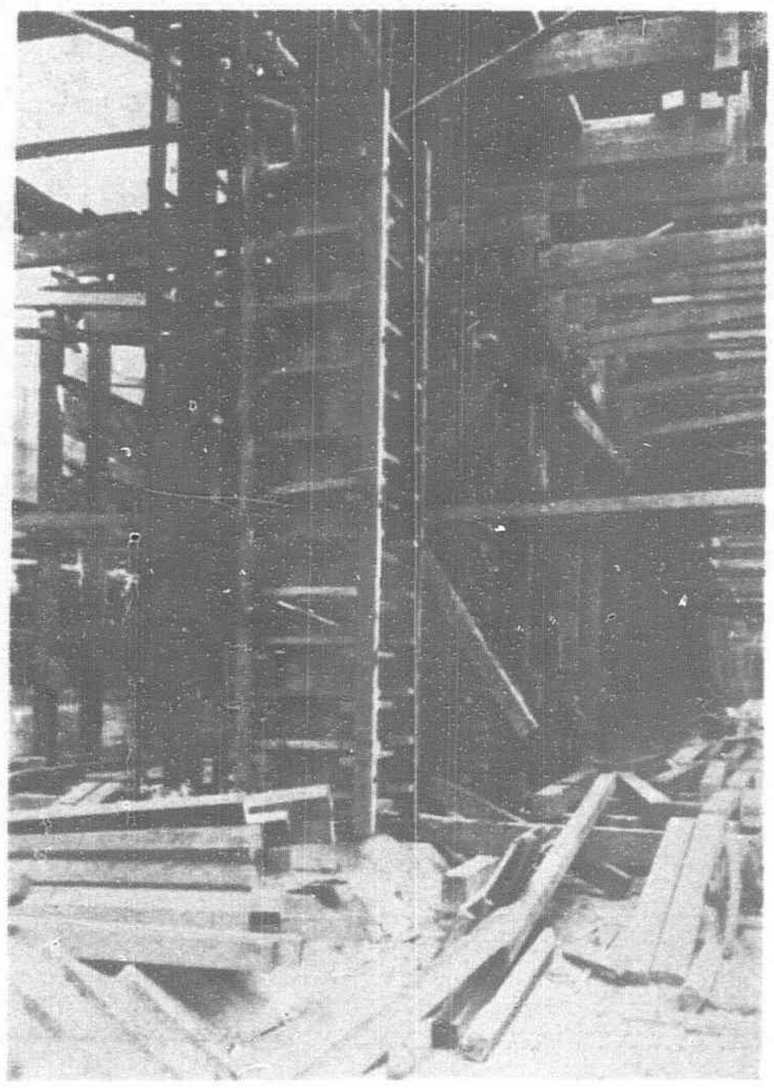




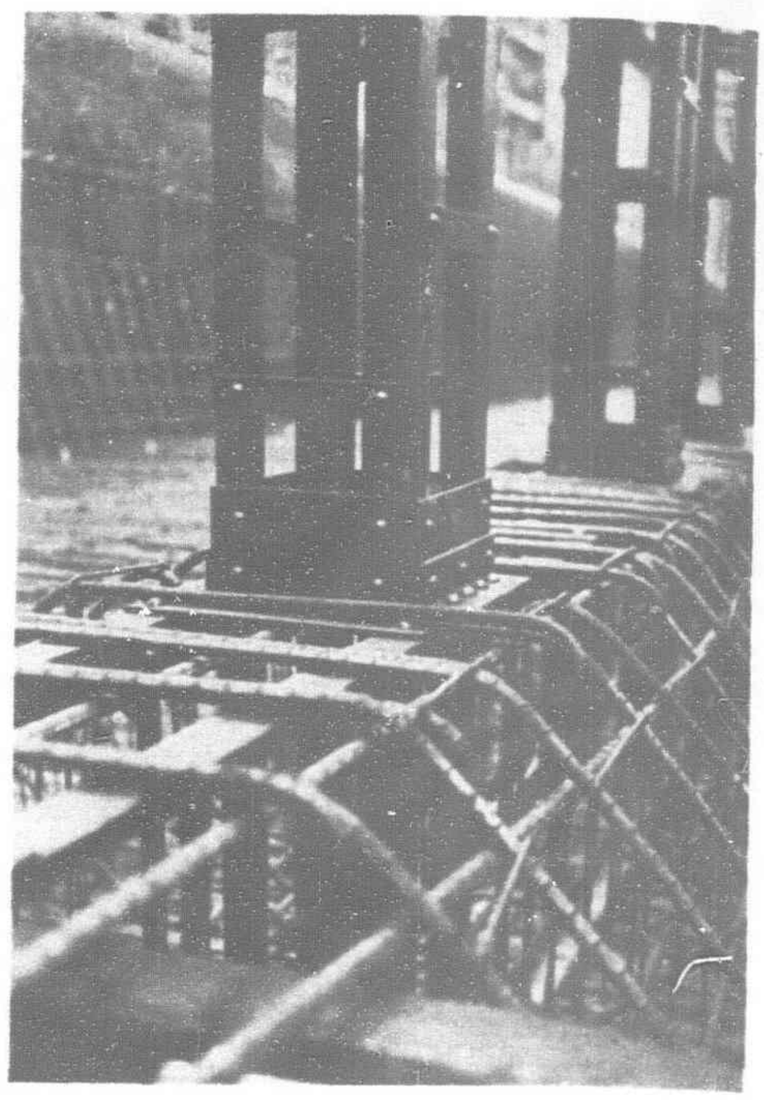
Above are shown phases of Digging Operations in which 385,000 cubic meters of earth will be moved. Operations began with I-Beam driving. The ground at Kobe was so cement-like in character that many of the I-Beams were found to be bent and twisted



Plucking I-Beams after digging



Central frame work



Central frame work

to speed up the train operation as well as for increasing frequency are therefore being contemplated and carried out everywhere.

The Hanshin's subway construction in Kobe is one example. The Hankyu's plan to build an elevated extension from its present Kobe terminal further into the center of the city, is another. Meanwhile the Government Railway elevated its four-track line in the city section of Kobe in October, 1931, as described in *The Far Eastern Review*, of December, 1931, and in addition, these lines will be electrified in the immediate future. In point of fact, the Government line running through the eastern new city section of Osaka in a semi-circle is nearing the completion of its electrification.

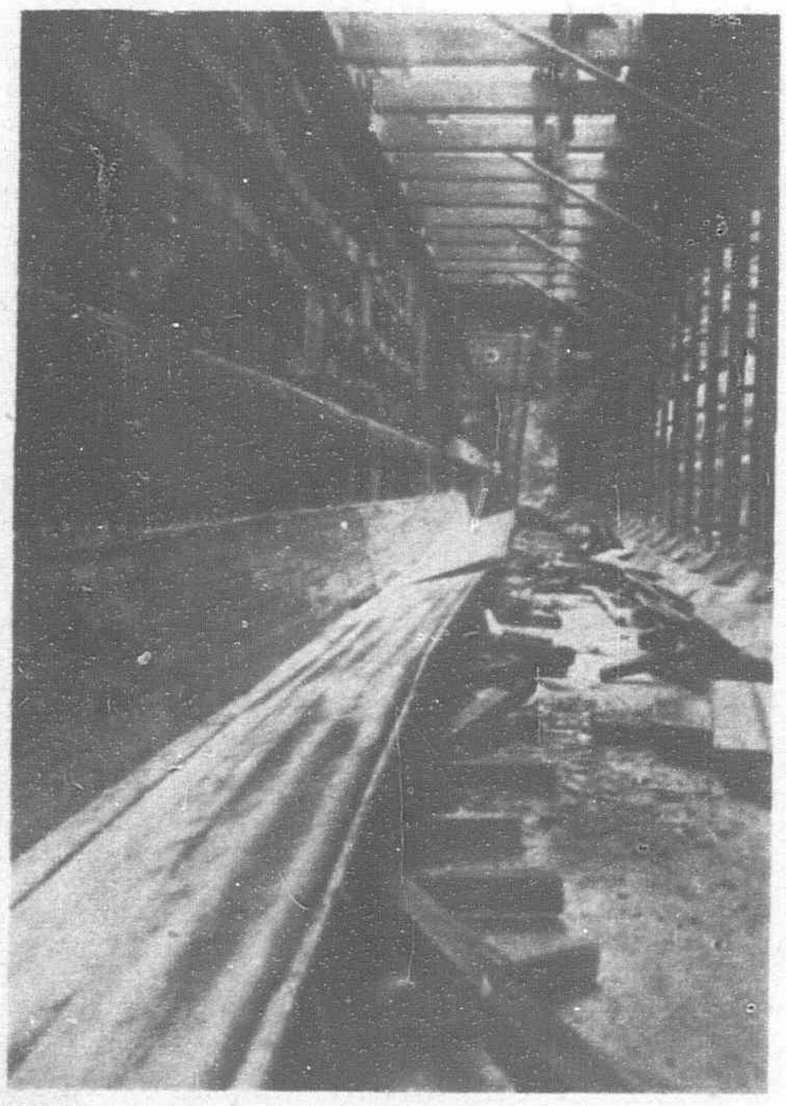
Hanshin Denki Tetsudo K.K.

The Osaka-Kobe Electric Railway Company, or the Hanshin Denki Tetsudo Kabushiki Kaisha to be exact, which is building the underground approach to the central part of Kobe under the pressing need to speed up and generally improve its train operation, is one of the oldest electric railways in this part of the country. The company was established in 1899 and its Osaka-Kobe trunk line was opened in April, 1905. To-day its capital stands at Y.100,000,000, of which Y.47,500,000 is paid up.

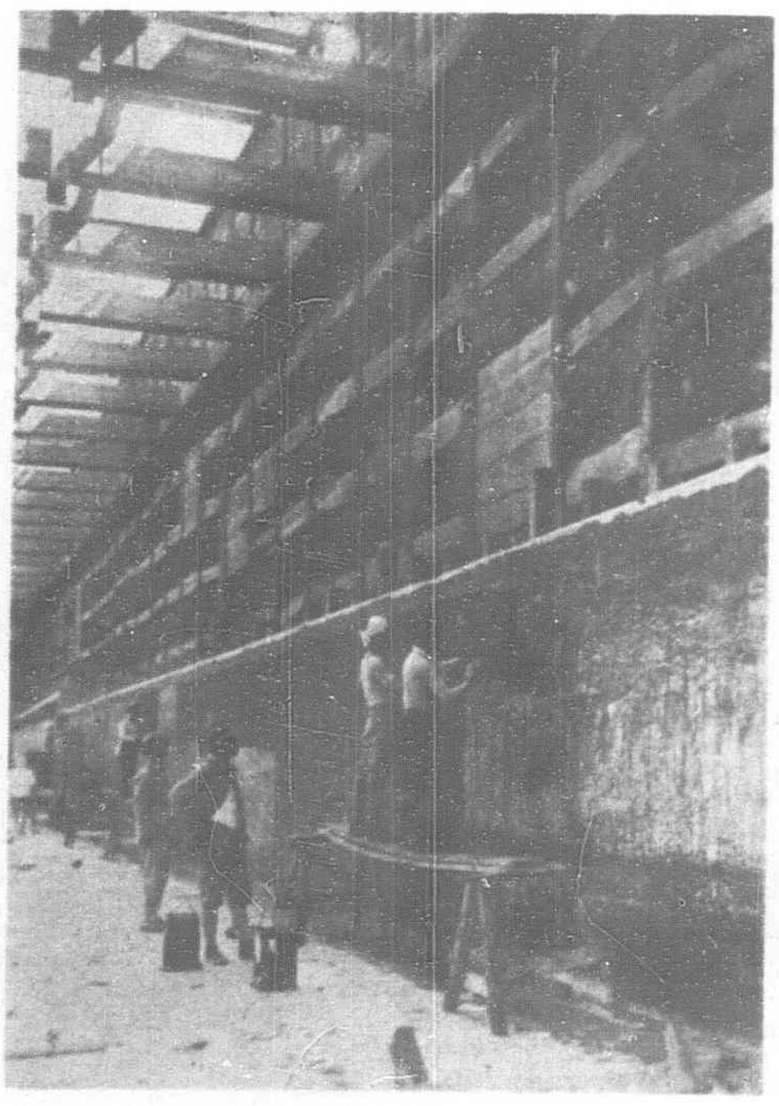
Its main line between Umeda (Osaka) and Takimichi (Kobe) covers only 19 miles. The company operates, however, the Osaka-Kobe National Highway Tramway, stretching 16 miles, in addition to a number of branch lines such as the North Osaka, the Dempo, and Koshien lines. The aggregate total operation mileage of this company amounts to 45 miles.

The length of the lines operated by the Hanshin is not imposing, but its Osaka to Kobe main line runs through one of the best suburban residential quarters in Japan. The salaried classes of men working in Osaka and Kobe live along the Hanshin line in great numbers and their steady patronage constitutes the bulk of its revenue. Moreover, there are many pleasure resorts as well as industrial towns along this line, these factors further enhancing the value of the railway.

The Osaka-Kobe National Highway Tramway, locally known as the Kokudo Densha, was brought under the control of the Hanshin some years ago. It does not yield a profit, but it at least prevents the Kokudo tramway from becoming a powerful rival of



Foundation concrete work under side wall



Asphalt used to prevent water seepage

Foundation concrete work

the Hanshin main line. Included among other enterprises in which the Hanshin is financially interested are the Osaka-Kobe National Highway Motor Bus Company, the Osaka Motor Bus Company, the Mt. Maya Cable Car Company, and some taxi enterprises.

The Hanshin is financed by a number of prominent businessmen of the Osaka-Kobe district, but the Sumitomo House is the largest shareholder (180,000 shares).

This railway primarily developed as a local line. When it was constructed nearly 30 years ago, the Government authorities were of the opinion that the railway should run over the then national highway, linking one town with another on the route between Osaka and Kobe. The traffic congestion in later years, coupled with the popular demand for higher speed, however, necessitated the Hanshin management's complete removal of its tracks from the national highway except at the Kobe end of the line. Since the road was partially elevated a few years ago in the neighborhood of Mikage, Kobe, the situation has been greatly improved, and at present, it is only for a very short distance that the Hanshin tracks run on the city street side by side with the general traffic. Even this, however, cuts down the speed. Moreover, it gives passengers an unpleasant feeling to see the motorman cautiously making his way through the congested part of the city, honking all the time, after the swift run from Osaka.

Outline of Project

There has been a long pending need for the Osaka-Kobe Electric Railway Company to build either an elevated or an underground approach to Kobe's center. Its early realization of this scheme, however, has hitherto been prevented due to the fact that the project has a close relationship with Kobe's city planning.

The Hanshin authorities have finally decided on the subway construction for two reasons: One is that it gives rise to knotty problems to clear the ground for an elevated system, as the section through which the railway is to run is densely crowded with shops and dwellings. The other reason is that the extension of the Osaka-Kobe National Highway is now under construction at the Kobe end and the Hanshin is permitted to take advantage of the opportunity to build its subway underneath this new highway.

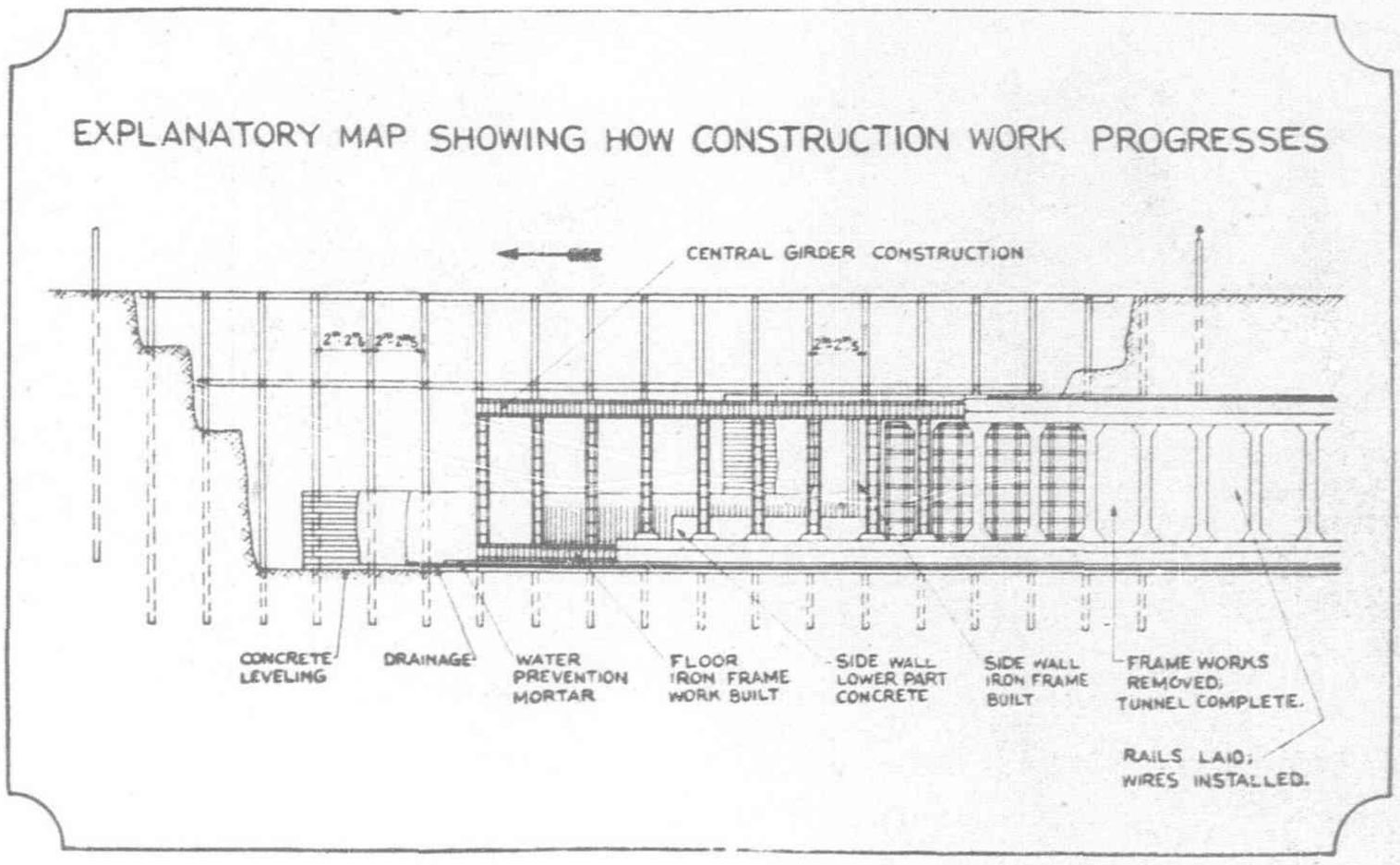
The subway construction work was started in March, 1931, and it is expected to be completed in the spring of 1933. The work is divided into two sections, 2,450 meters of tunnel section and 434.65 meters of open section connecting the subway to the present operated line, the entire length thus running up to 2,884.65 meters.

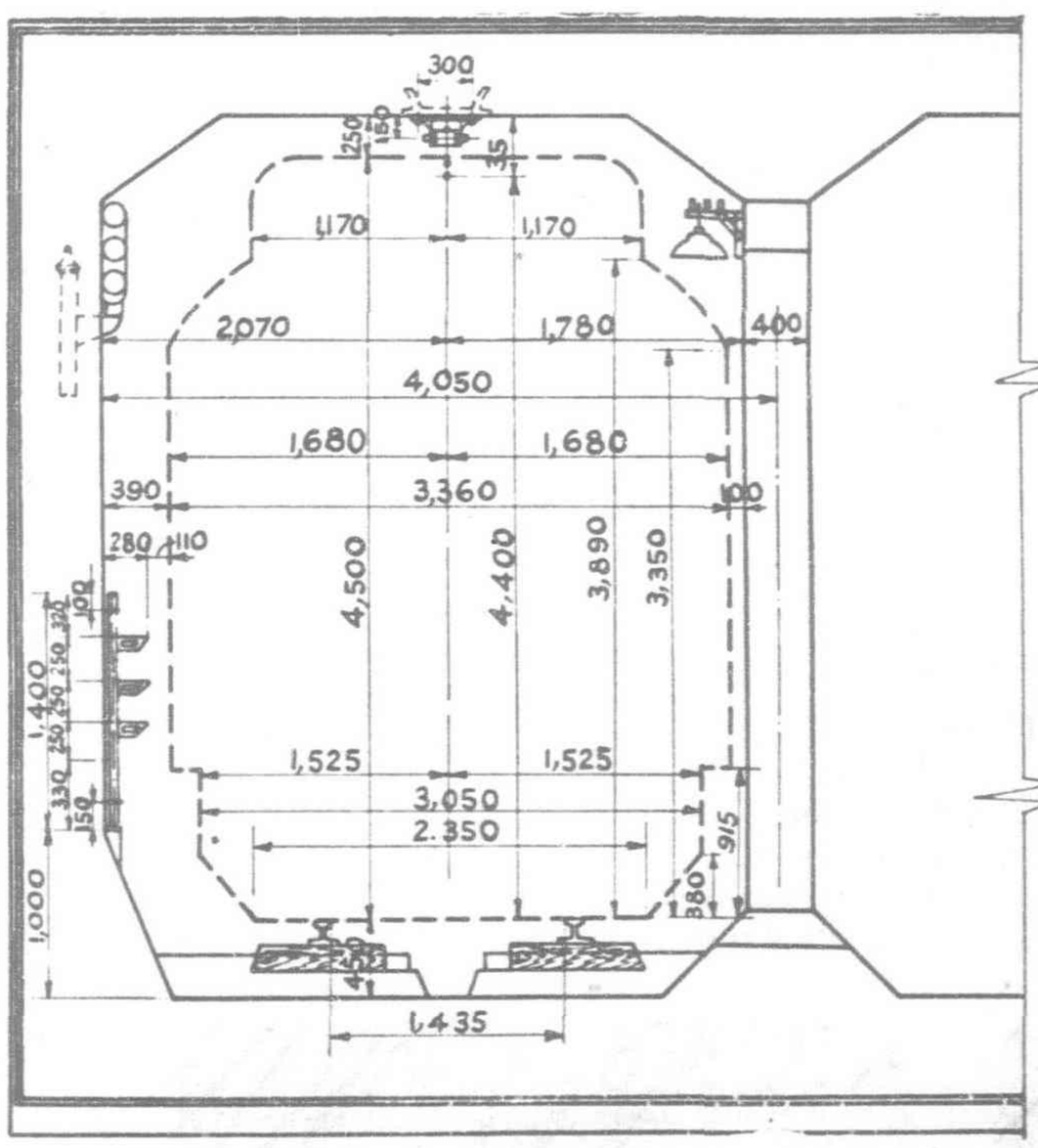
The line starts from directly in front of the Sannomiya Station of the Government Railway. It runs east along the National Highway extension, about three meters below the surface.

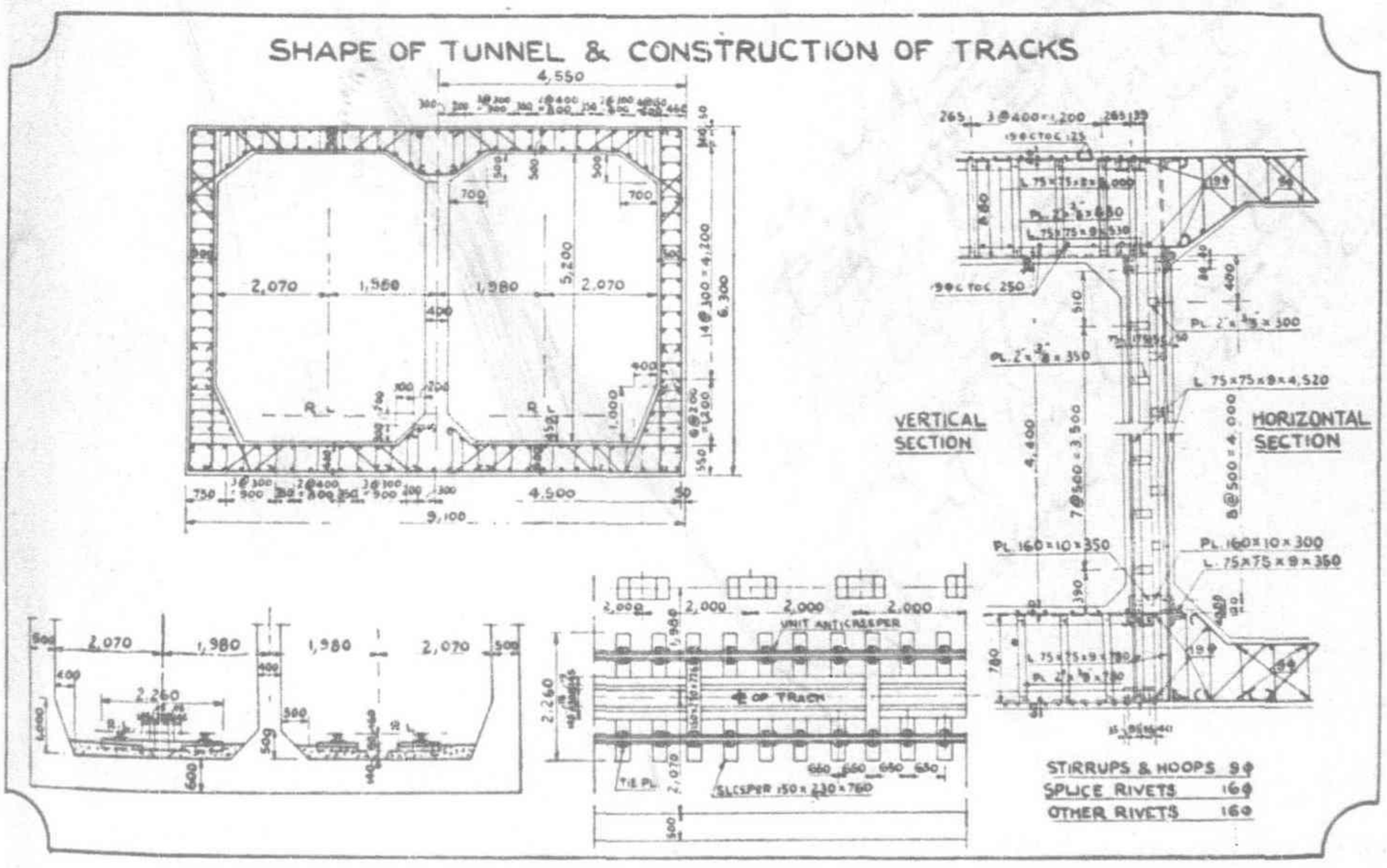
At Wakinohama Sanchome, the line leaves the National Highway northward, goes under the Onohama branch line of the Government Railway, and then runs parallel with the present operated line of the Hanshin for a short distance to a point about 20 meters south-east of the Nada Station on the Government Railway. Here, the tunnel section ends and the subway joins the surface line.

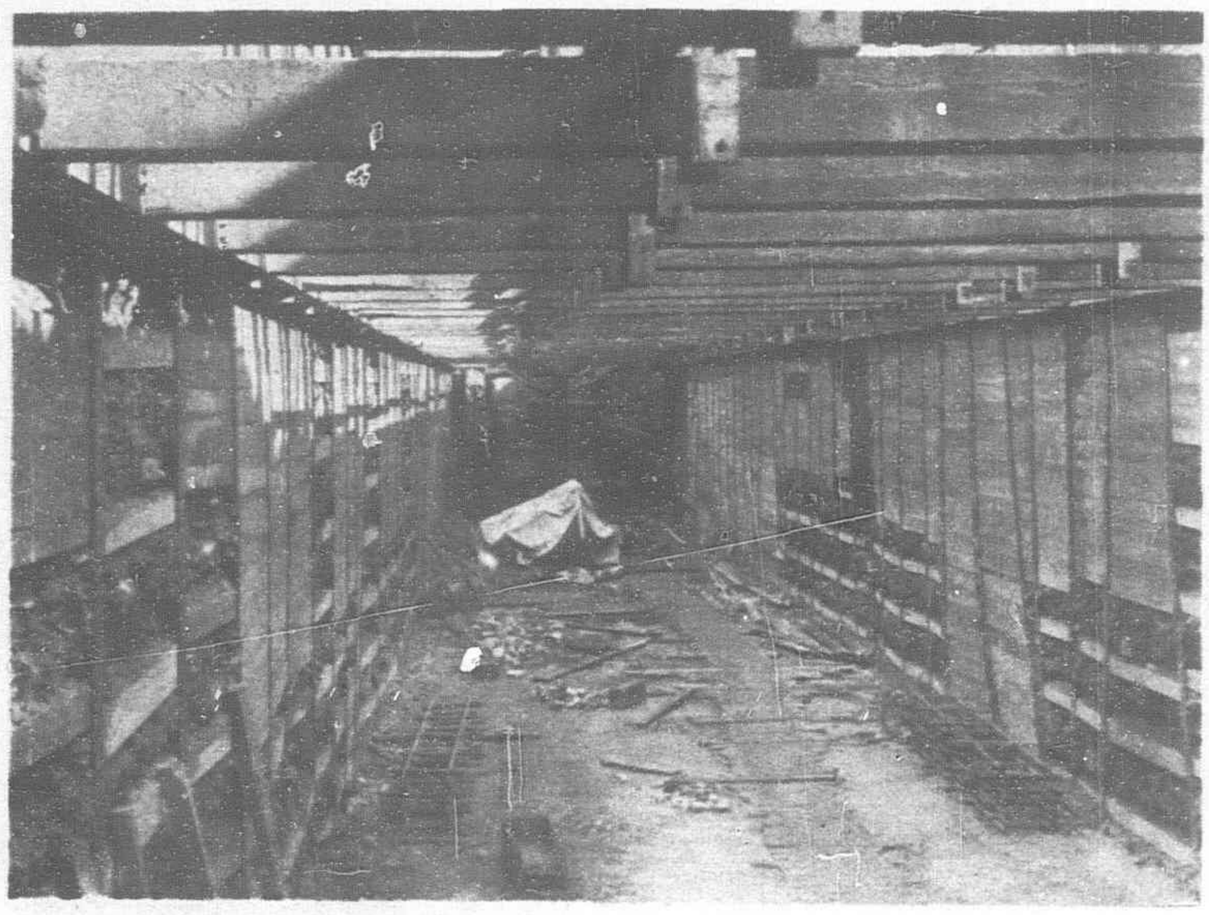
At the Kobe starting point, three underground lines will be built between four platforms, each one of these platforms having sufficient length to accommodate eight carriages at a time. To avoid congestion, these platforms will be divided into two kinds, one accommodating passengers boarding the trains, and the other, those leaving the trains.

A new Kobe terminal will be built by the Hanshin in front of the Sannomiya Station of the Government Railway on the other side of its spacious square at the end of the Osaka-Kobe National Highway extension and the starting point of the proposed 108 foot wide boulevard

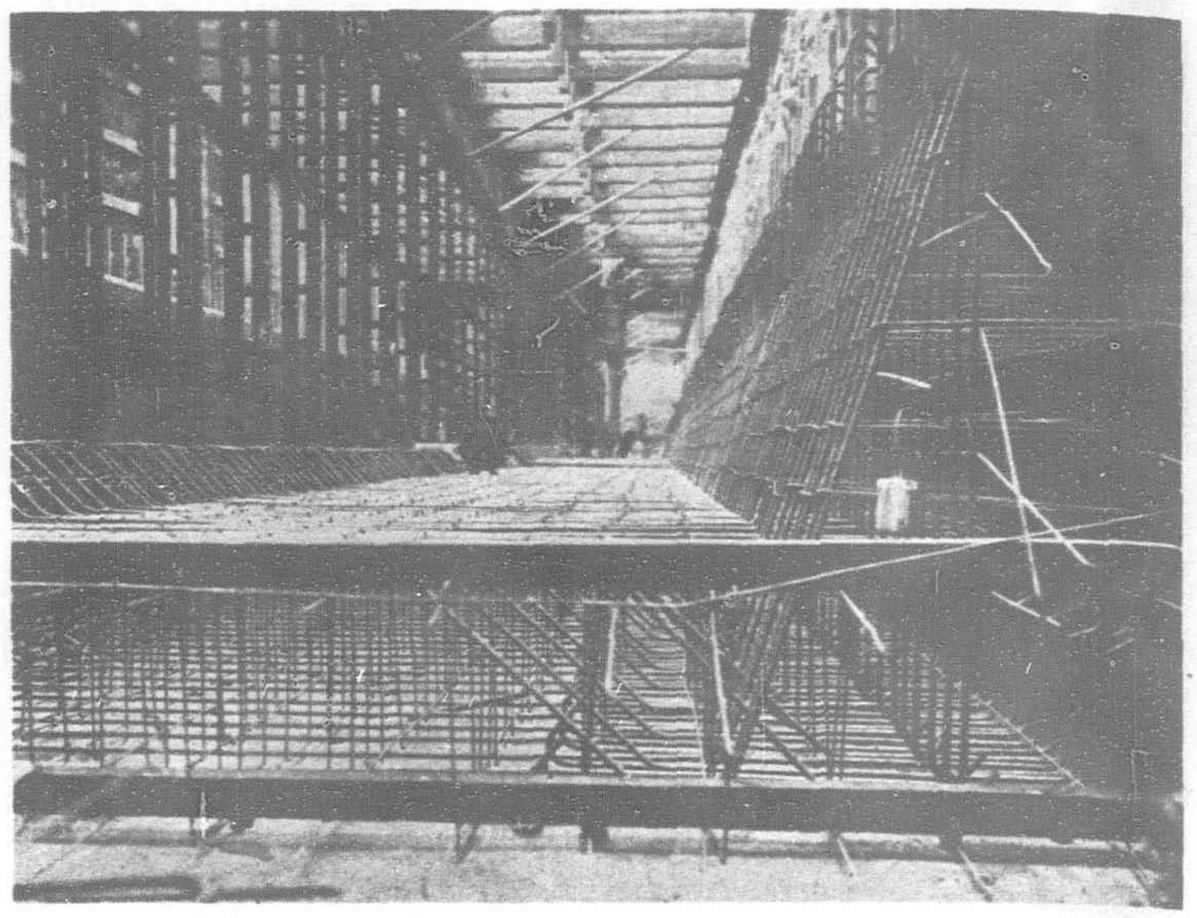

EXPLANATORY MAP SHOWING HOW CONSTRUCTION WORK PROGRESSES
CENTRAL GIRDER CONSTRUCTION
CONCRETE LEVELING
DRAINAGE
WATER PREVENTION MORTAR
FLOOR IRON FRAME WORK BUILT
SIDE WALL LOWER PART CONCRETE
SIDE WALL IRON FRAME BUILT
FRAME WORKS REMOVED; TUNNEL COMPLETE.
RAILS LAID; WIRES INSTALLED.







Tube after completion of digging



Foundation frame work for the reinforced concrete

leading from the station square to the harbor. The building alone will occupy a ground space of 400 tsubo (one tsubo equals six square feet). It will be a nine story reinforced concrete structure, seven stories above the ground and two stories below. Four elevators and two stairways will connect the ground floor with the underground platforms.

It is learned that seven stories of the building above the ground will be occupied by a department store, and that the contract has already been signed between the Hanshin management and the Sogo, one of the leading department stores carrying on business both in Kobe and Osaka. In view of the fact that the proposed station building is located in the business center of this harbor city, prosperity is predicted for this department store.

Subway Construction

The construction of the Hanshin's underground approach to Kobe's center is being carried on according to the following process :

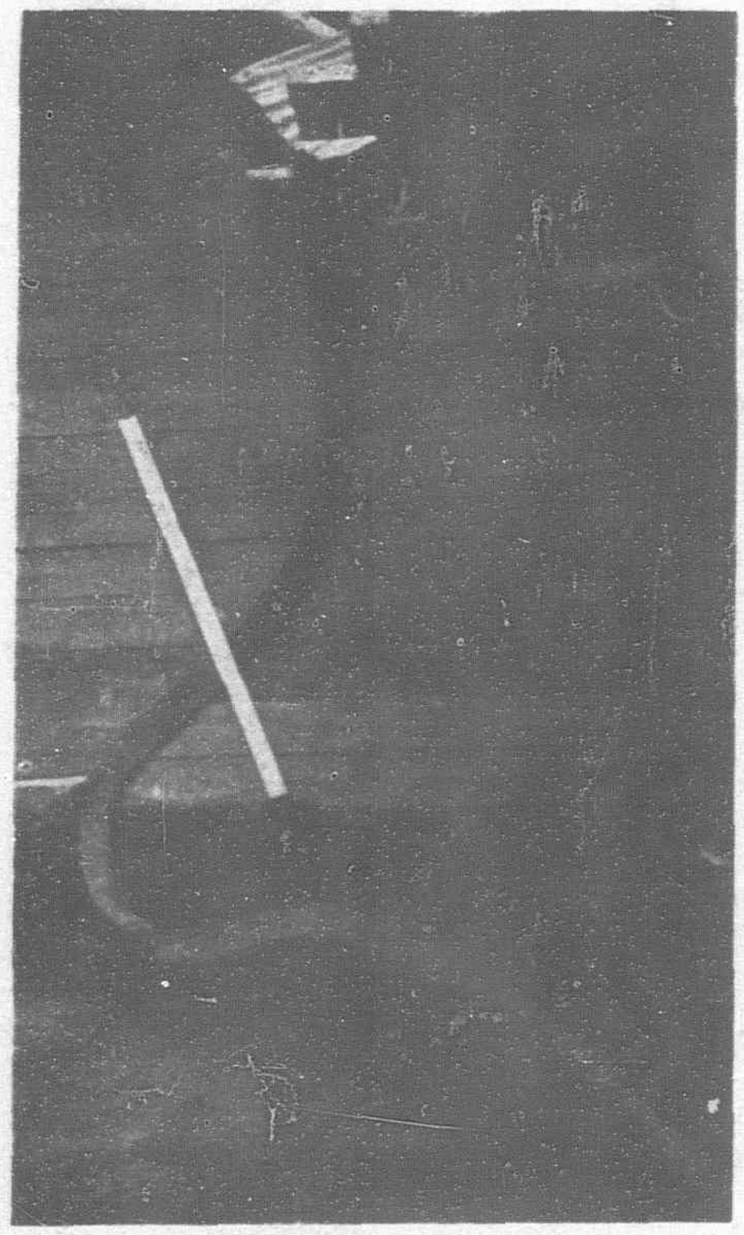
(*a*) To begin with, I-beams are driven into the ground at a distance of from 2 to 2.5 meter apart on both sides of the subway route and about 50 centimeters outside of the outer limit, as a preliminary measure to prevent landslides as the digging work goes on.

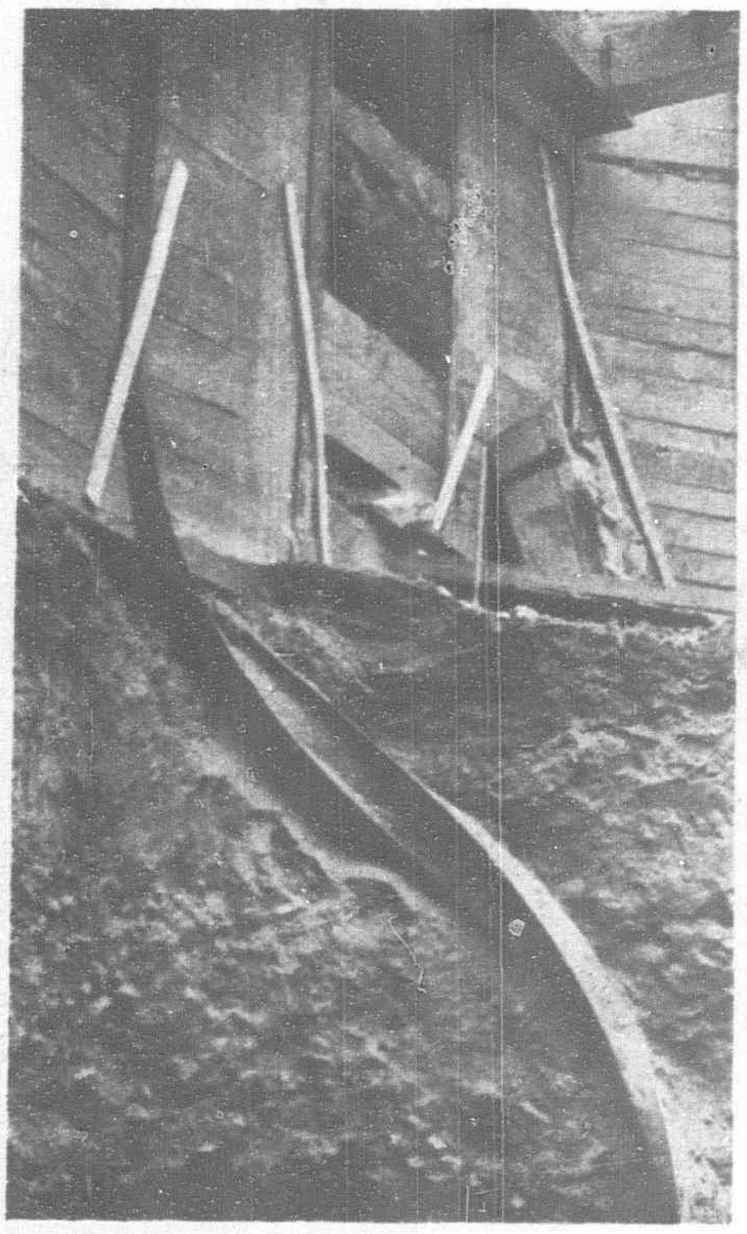
(*b*) It was planned to put in sheet piling as the digging went on, but it was found that the type of earth in Kobe made this hardly necessary. Wooden frame work was erected, however, to make certain that no mishap would occur. This also facilitates the construction work.

(*c*) Terra cotta pipe with an inner diameter of five inches is laid on either side of the open cut in order to drain off the subterranean water, and pumps are constantly operated to expedite the drainage.

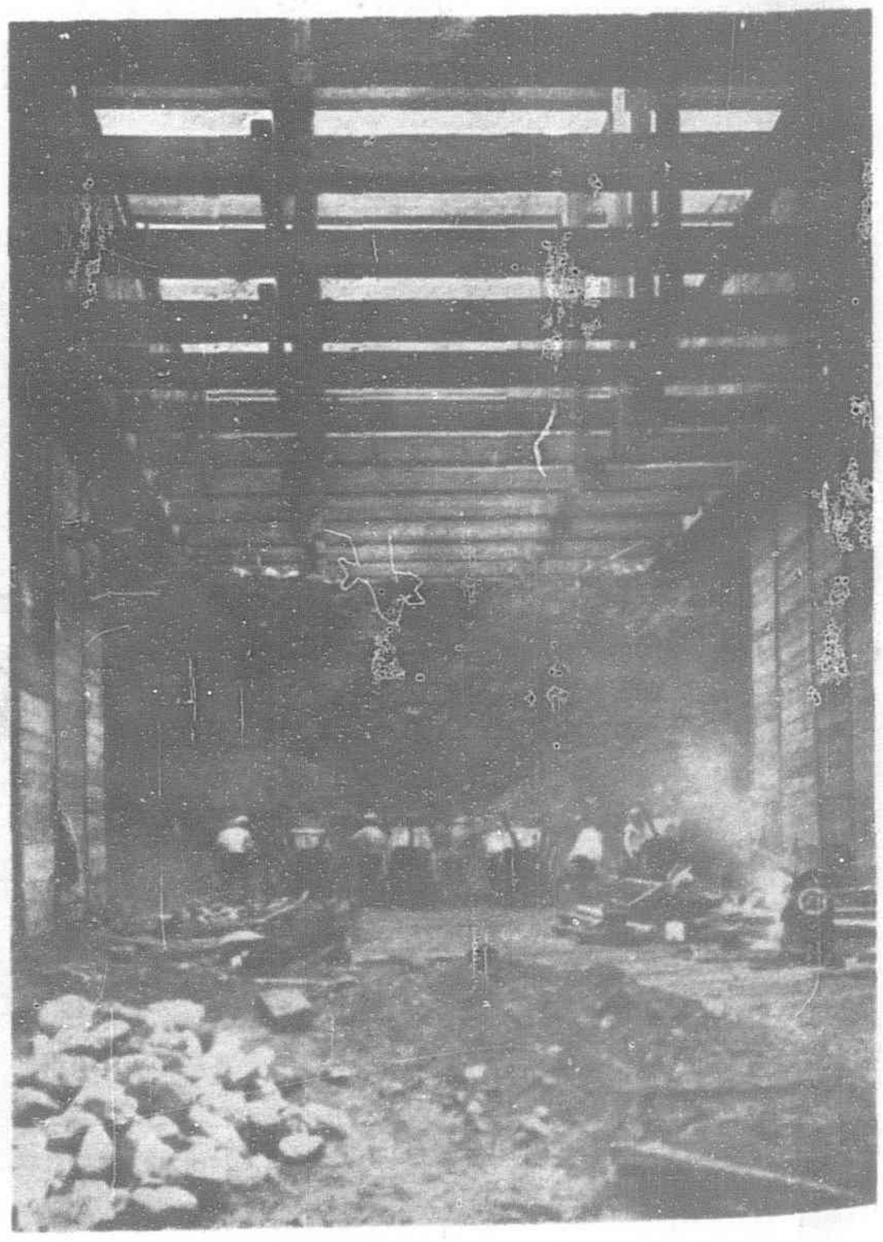
(*d*) Special precautions are taken to make the tunnel walls watertight. Concrete and mortar have waterproof qualities, but as an extra measure, cotton fabric is pasted on the walls and then covered with asphalt.

(*e*) It was originally planned to use round bars to reinforce the concrete, but rib bars have been used instead. The form for the central partition was first built, followed by those for the floor and the walls. Then the concrete was poured for the floor and the lower part of the outside walls, the central wall coming next. The upper floor follows, as shown in the accompanying illustrations.

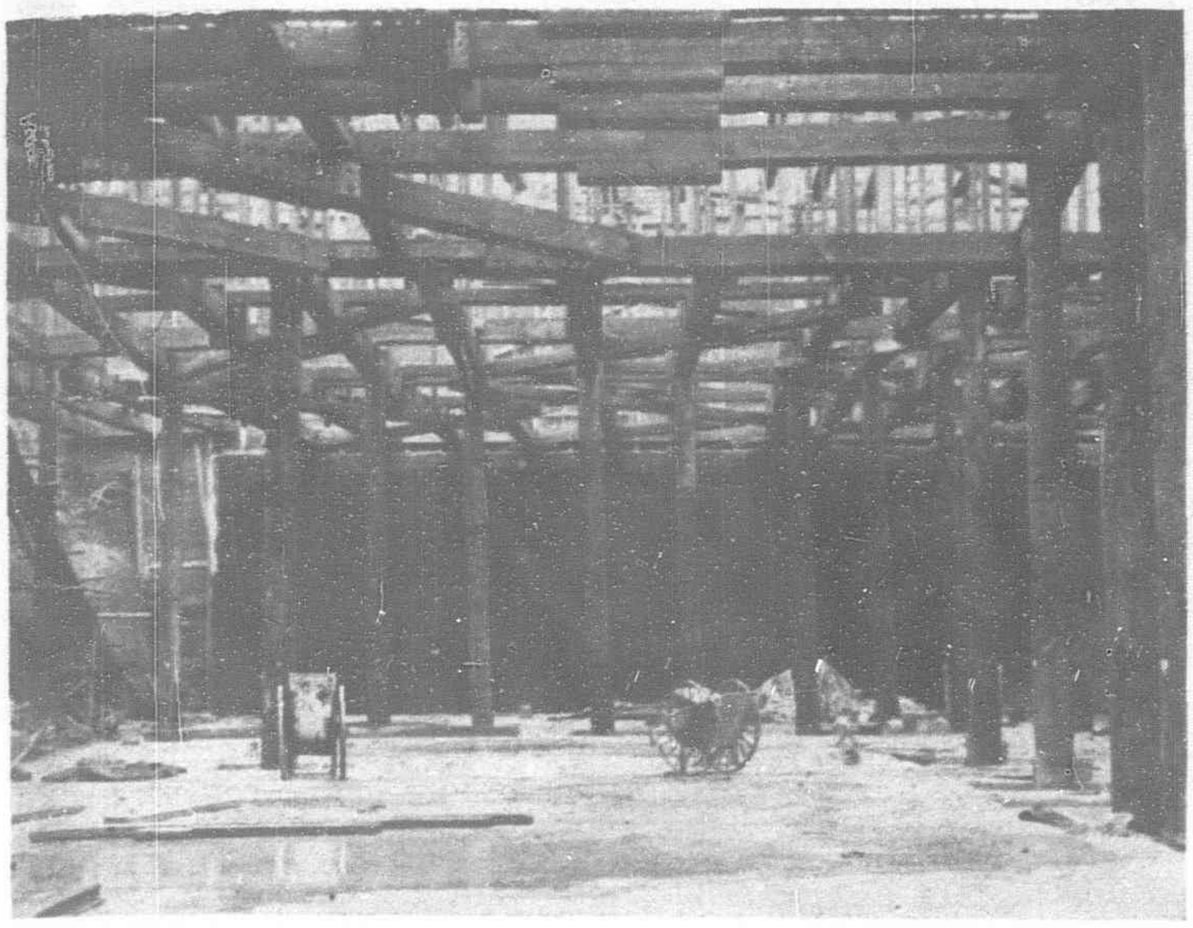


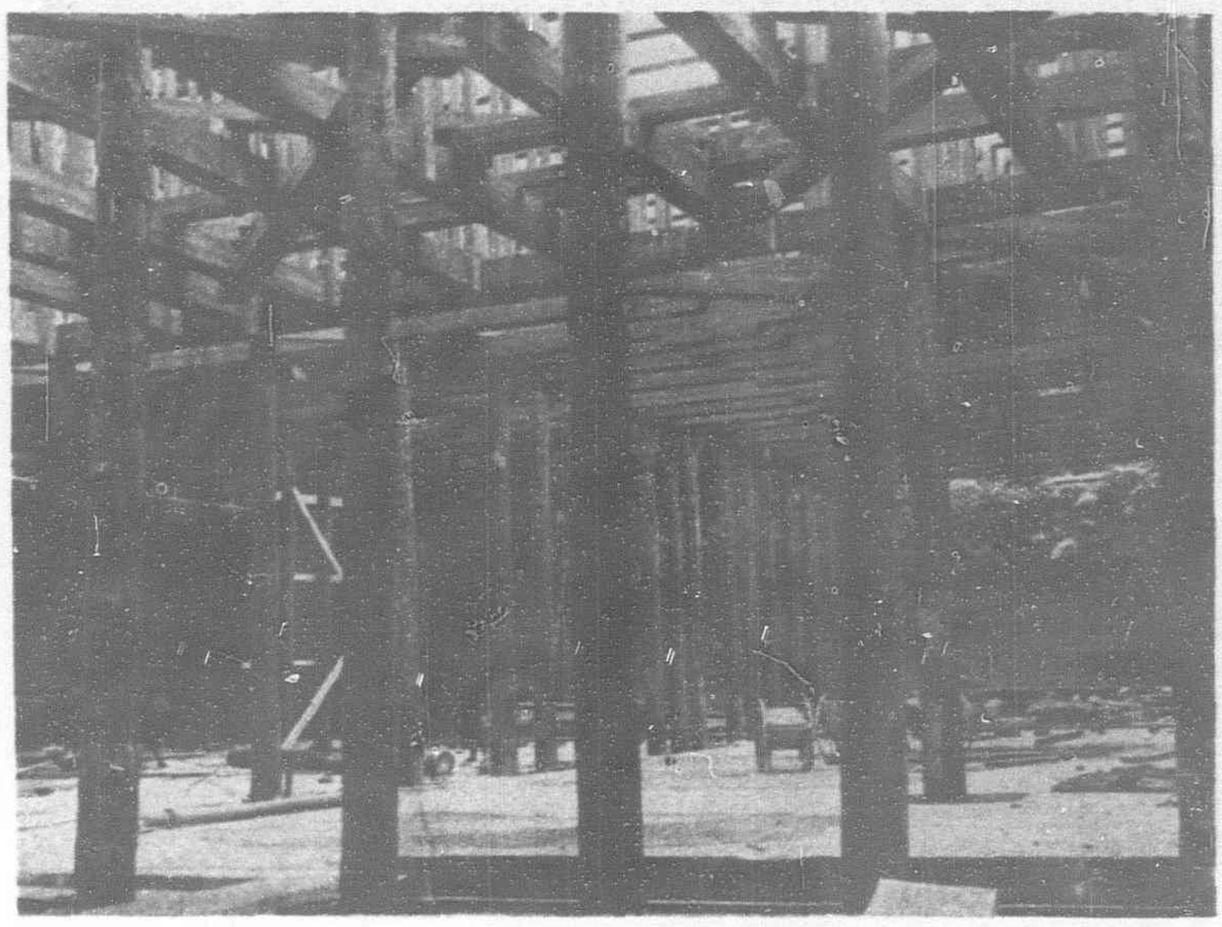


Showing how I-Beams twisted and bent when driven into the hard soil of Kobe

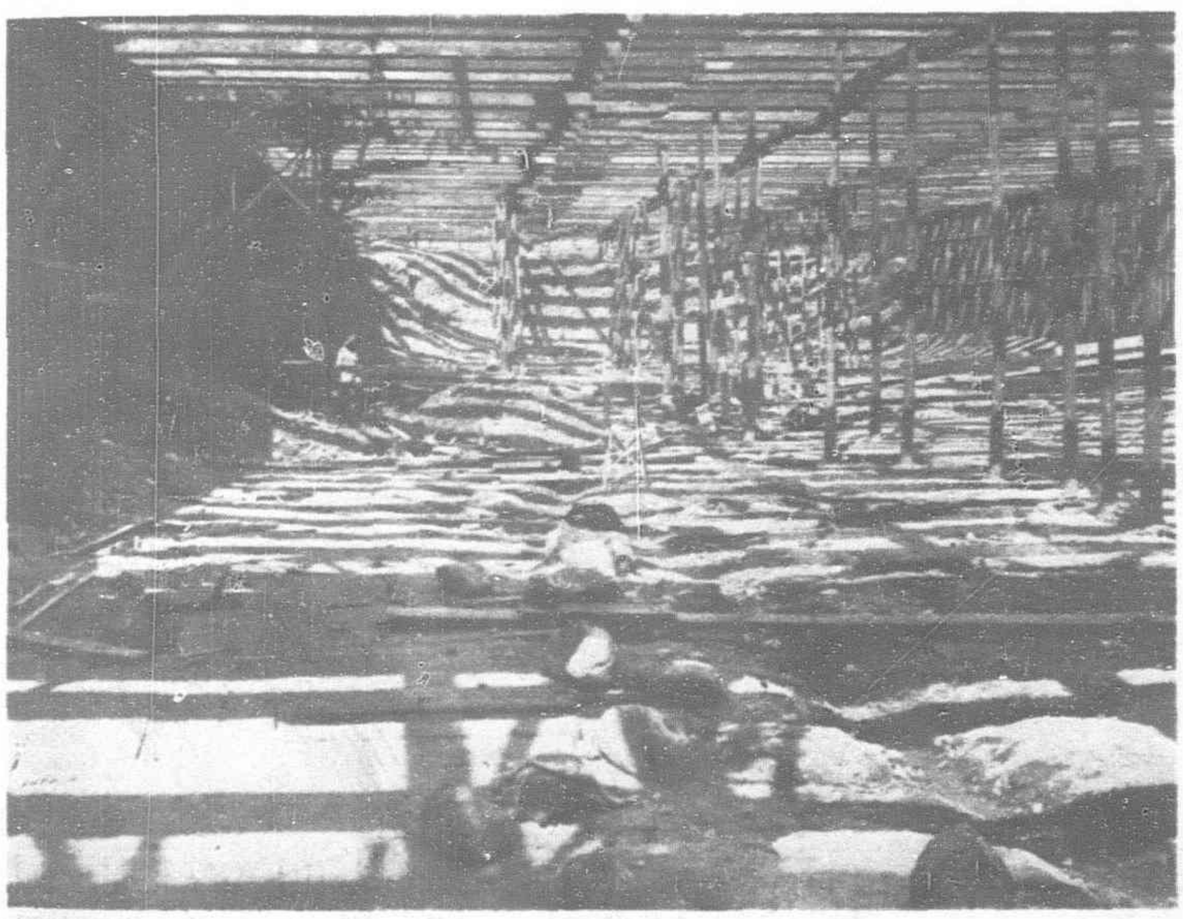


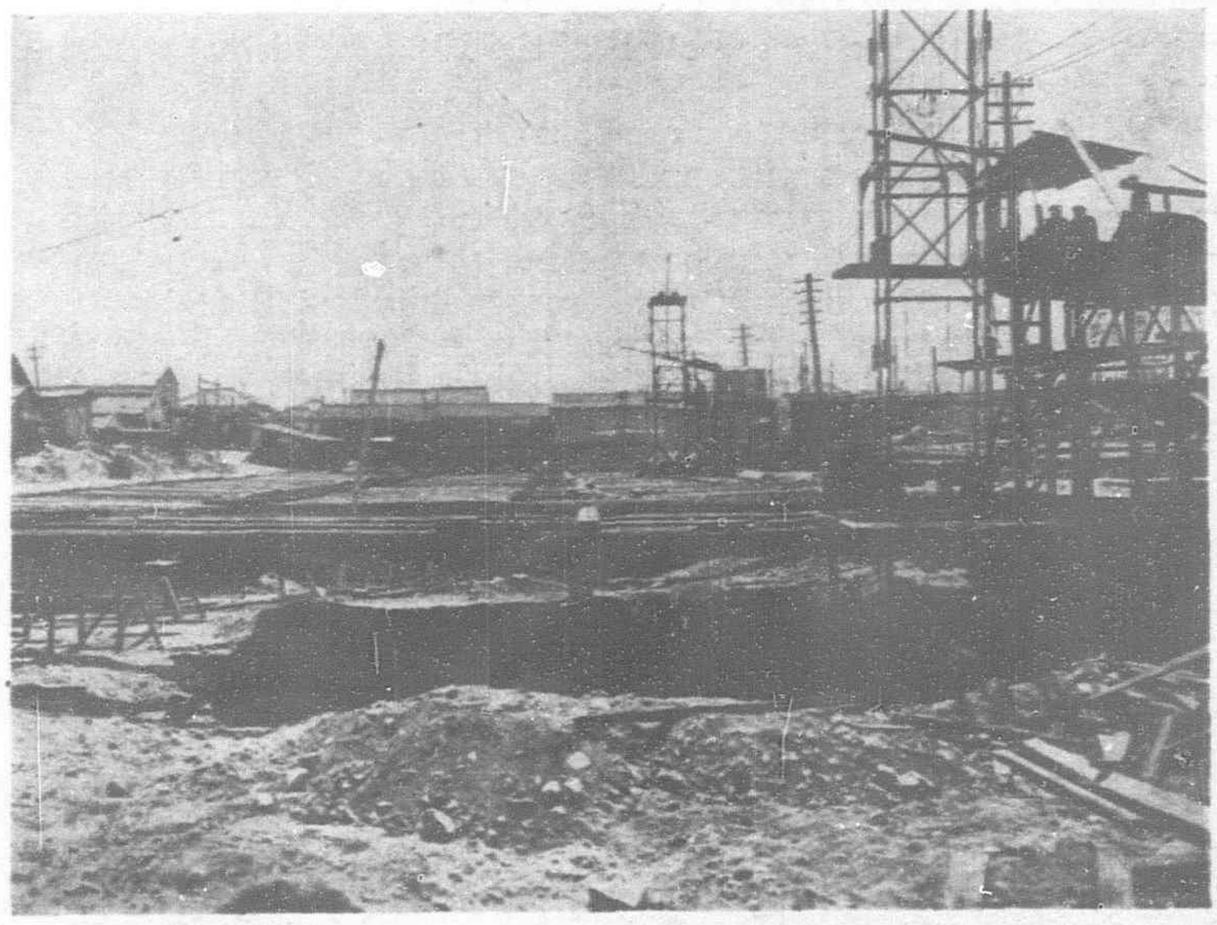
Digging operations in Tunnel Face



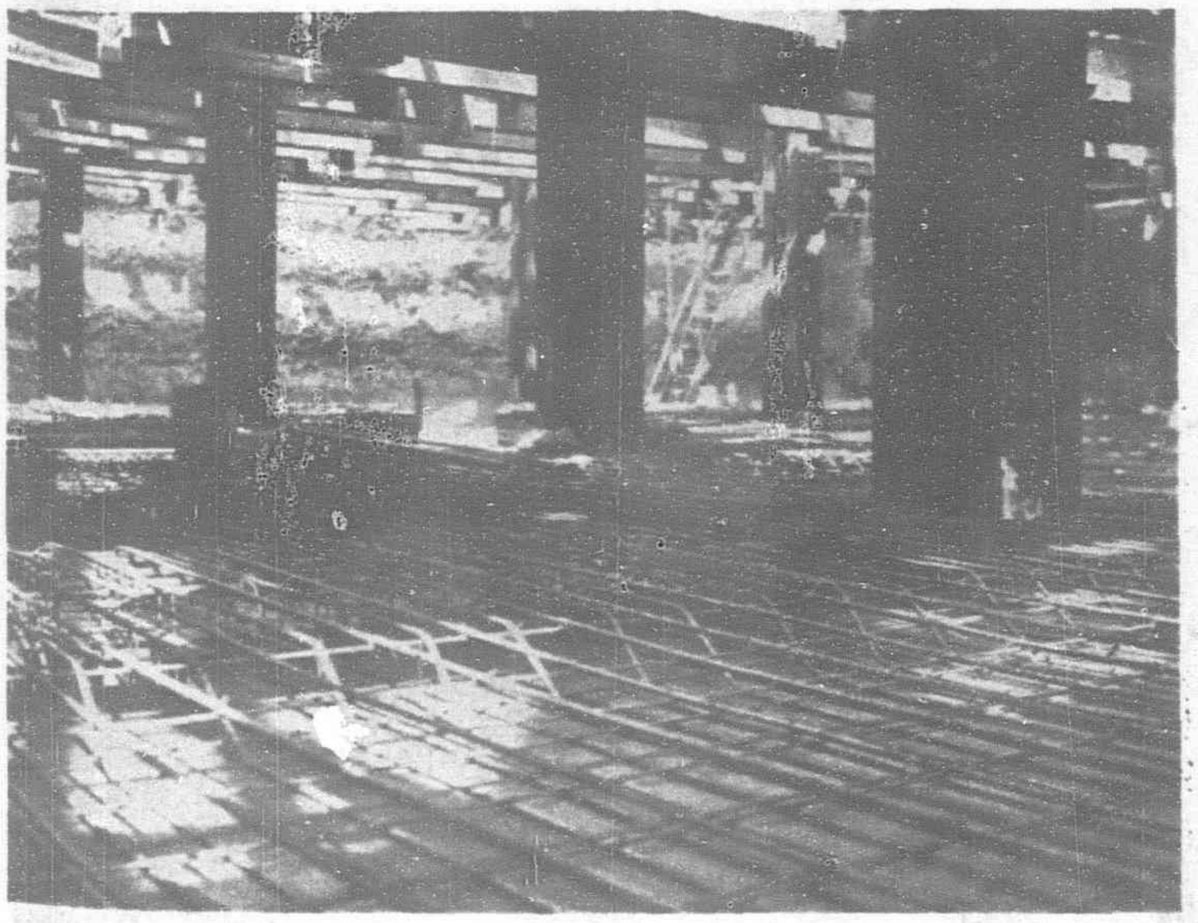


Two pictures showing construction work in progress on the Sannomiya Station

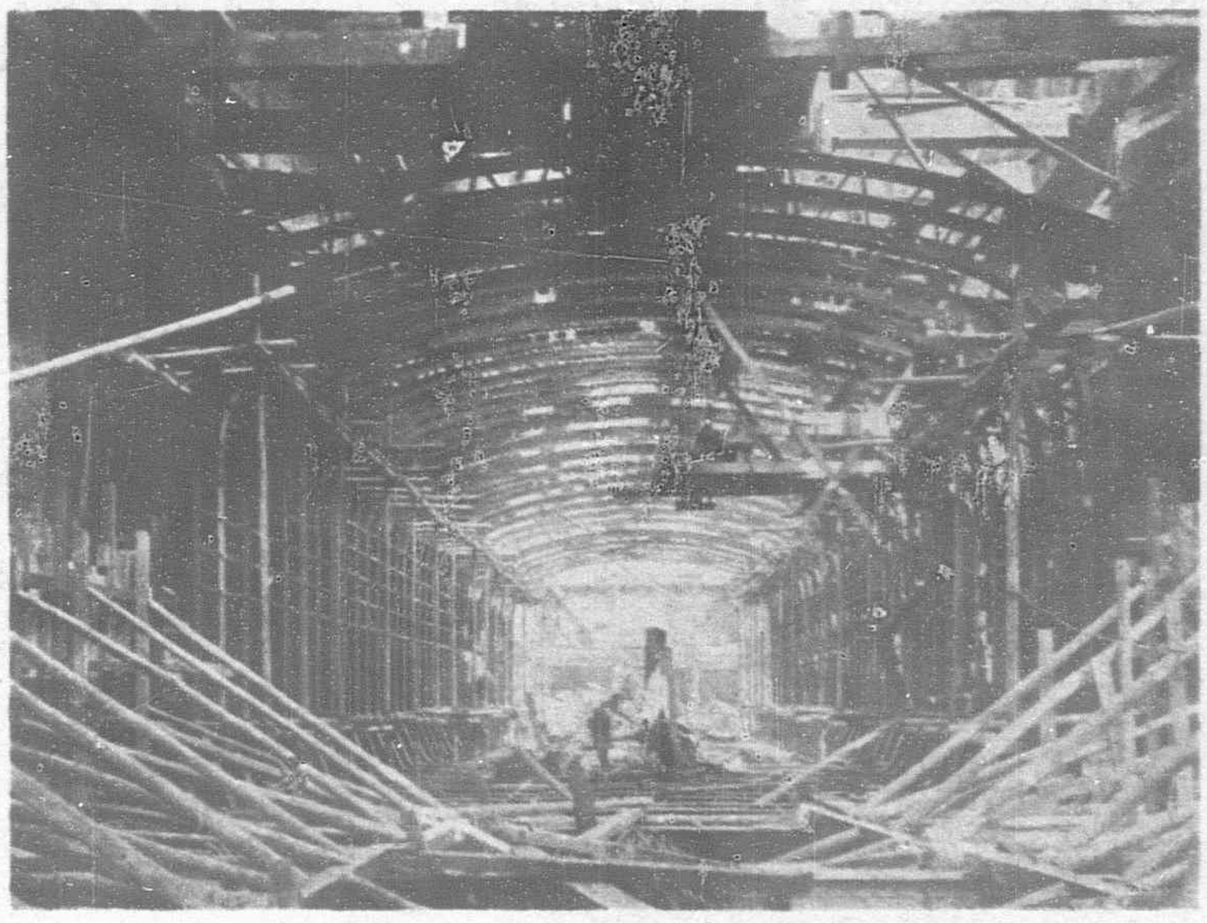




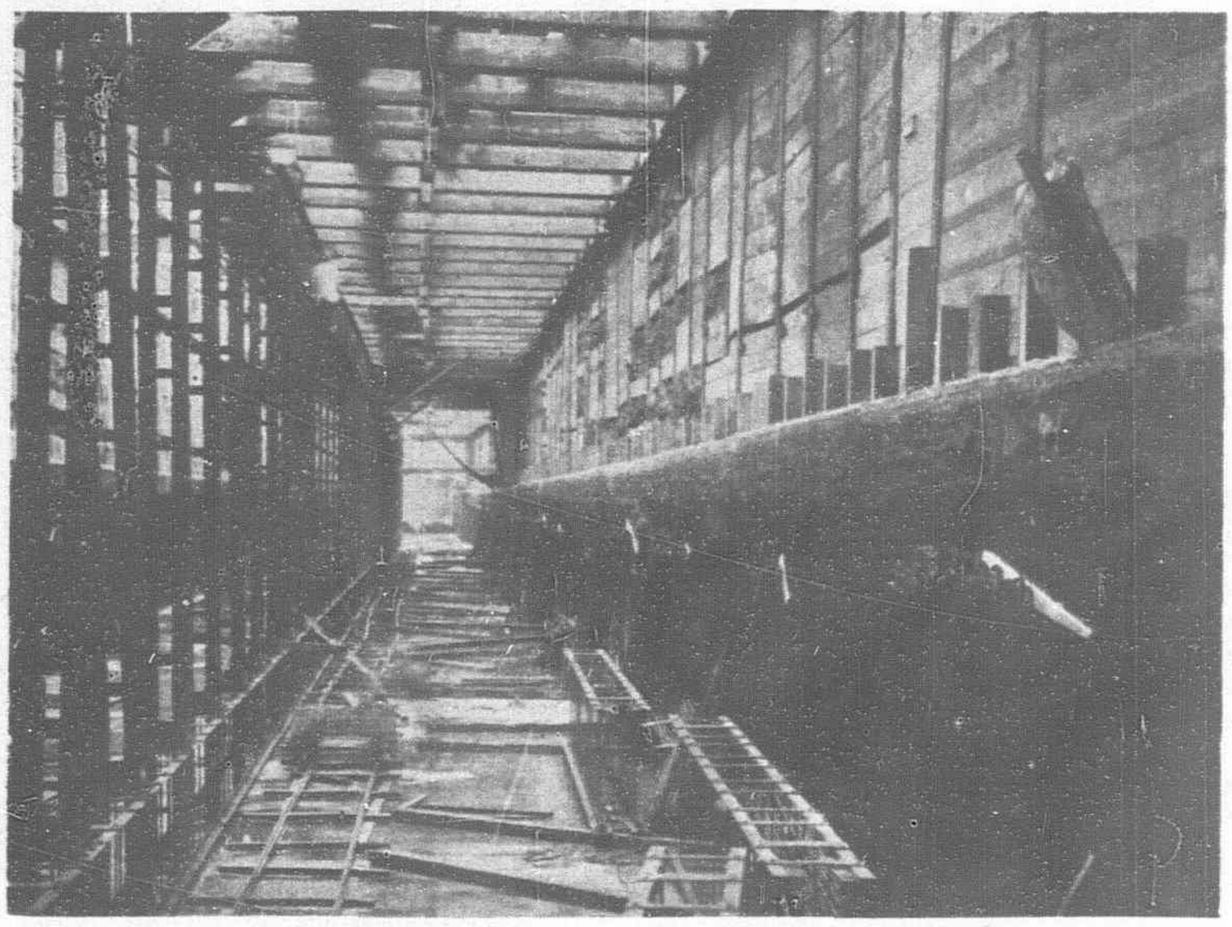
Digging operations for the Sannomiya Station



Reinforced concrete ground work of the Sannomiya Station Yard



Subway approach to the Sannomiya Station



Foundation concrete work

(*f*) As soon as the tunnel is completed, further seepage prevention work as well as tunnel protection work is carried out and then the tunnel is buried. With the tunnel underground, the road surface work and the construction of the Kobe Municipal tramway is undertaken.

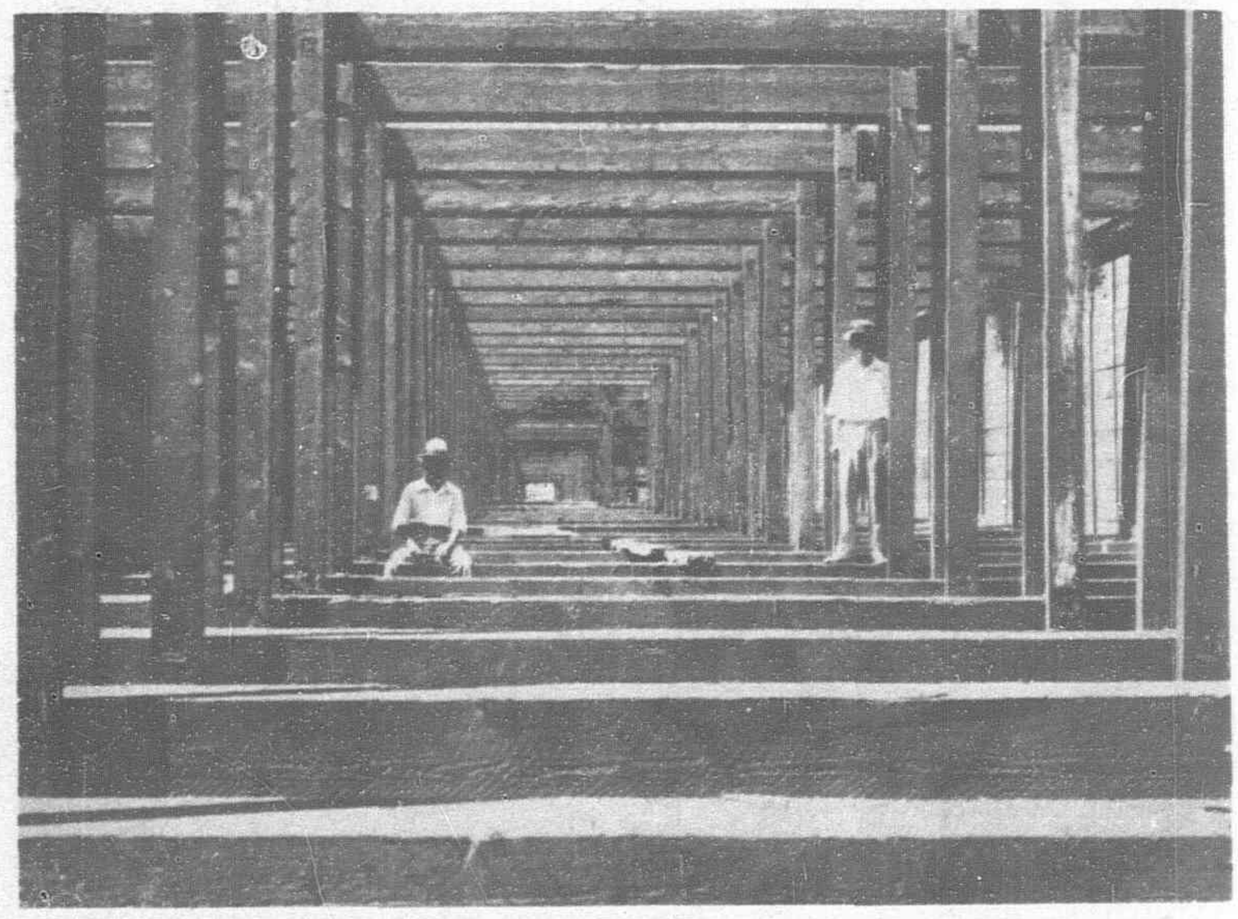
Although elaborate steps are taken to prevent the penetration of water, three pumps will be installed at three different places in the tunnel and these pumps will be put in operation automatically when drainage becomes necessary.

As for the ventilation, two blowers will be installed at a point on the Shin-Ikutagawa boulevard. These blowers will completely change the air within the tunnel in 30 minutes. Moreover, a ventilator will be installed near Onohama to help the natural circulation of air.

In case of emergency, the passengers may leave the tunnel at three stations, namely, Sannomiya (the terminal), Kasuganomichi and Iwaya. In addition, two more emergency exits will be made at Shin-Ikutagawa and Onohama. This means that the tunnel will be provided with emergency exits at an interval of every 700 meters, and when a passenger wants to get out, the longest distance he will have to walk is 350 meters.

There were two places where the construction of the subway was technically difficult. One was the sharp curve at the passage of the underground railway beneath the Onohama branch of the Government Railway, and the other was the spot where the underground railway went below the Shin-Ikutagawa conduit.

The Onohama passage was accomplished by dividing the work into two phases. First, the elevated Government Railway was removed west toward Kobe's center and the eastern half of the underground railway was built. Then, the Government Railway was again removed east, so that the remaining western half of the subway might be finished. Upon the completion of the subway, the Government Railway was restored to its original site.



Lumber frame work to prevent collapse and landslide after digging

Shin-Ikutagawa was originally the name of a stream flowing from the hills to the sea across the eastern section of Kobe. The region cut by the stream was reclaimed and the water confined to an underground conduit so that a broad driveway might be created above. The Hanshin underground railway had to pass underneath the conduit. When the conduit was built, however, it was known that the Hanshin subway would go underneath it and therefore provisions were made, iron sheet piling being put in, while the conduit was made strong enough at this point not to be affected by the subway construction.

When the subway construction was planned, one of the problems which troubled the Hanshin officials was how to dispose of the surplus earth produced by the digging. It was fortunate for the Hanshin, that part of this earth could be used in reclaiming the Shin-Ikuta River, while the remainder could be used in reclamation work going on at the Mirume seashore in the eastern section of Kobe's water front.

The principal items required for the entire subway construction project are as follows:

Iron materials, 11,000 tons.
Reinforced concrete, 64,000 cubic meters.
Concrete, 17,000 cubic meters.
Mortar, 4,000 cubic meters.
Cement, 160,000 barrels.
Cotton fabric, 300,000 square meters.
Asphalt, 1,200 tons.

In addition, the subway construction requires 385,000 cubic meters of digging, 93,000 cubic meters of filling in, and 7,500 square meters of stone wall construction.

A Significant Oil Deal

(Continued from page 544)

There is also the question of the extent of the Russian supplies available for export. The fact that the yield of oil is far below the quota, has been the subject of much discussion and censure in Russia recently. Yet in spite of this and the arrangements for supplies to Canada, which are in addition to the exports of recent years, increasingly large quantities are being sent to India.

In the past few weeks the American concerns have been forced to reduce their prices in Eastern India by as much as 4d. and 5d. per gallon to meet the intensified competition from Russia. (It is of interest that these reductions and several cuts made in the price of gasoline during the past few weeks in America, are really responsible for the increase of price in Great Britain which has set up a boomlet in oil shares during the past two weeks).

It is not likely that in the face of these new drains upon her supplies Russia would be willing to undertake a commitment for a further 100,000 tons with the implied proviso of other contracts to follow, merely to comply with the demands of an individual Japanese business man who is not even a power in the oil industry in his own country.

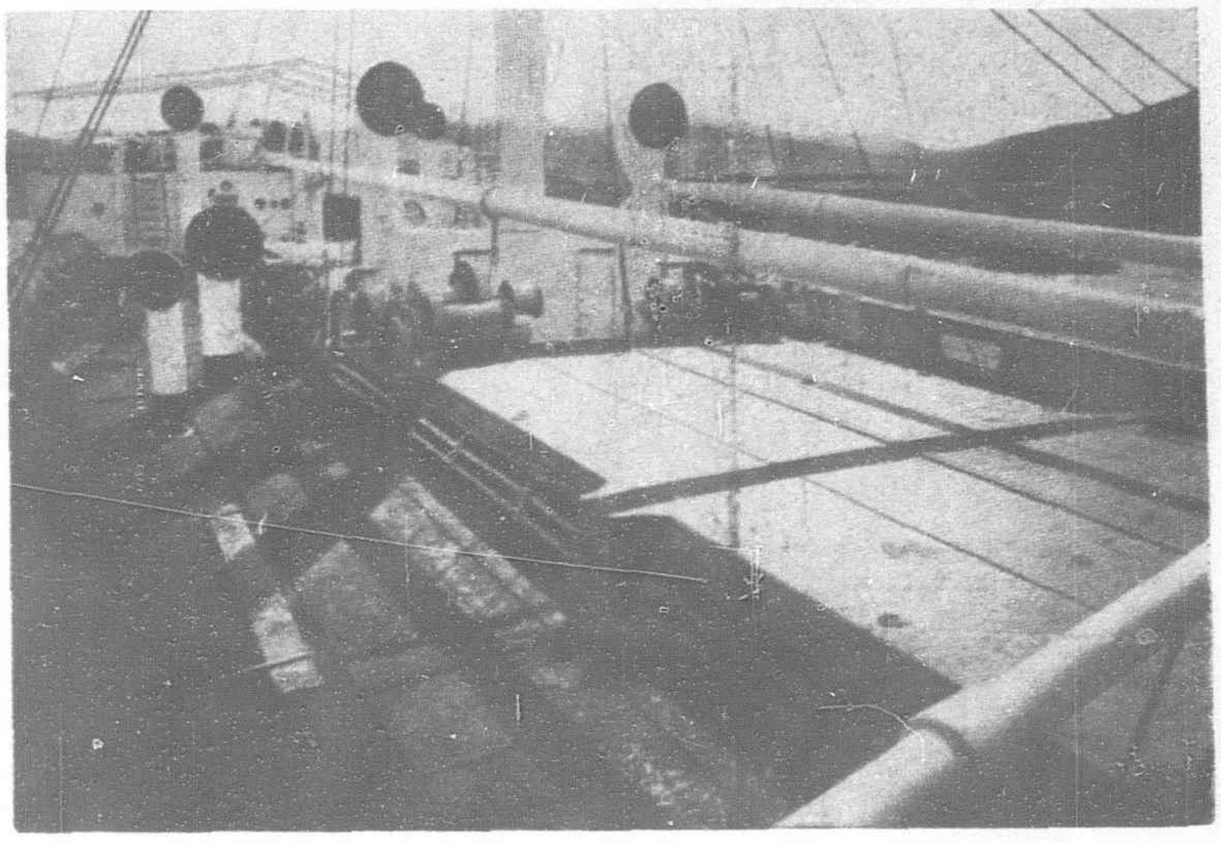
What the final result of this contract will be is difficult to estimate. The depression in oil industry is one of the important factors in American unemployment. It is estimated that hundreds of thousands of her unemployed could be re-absorbed if oil consumption could be brought up to the level of production so that the idle wells could once again commence work.

The Russo-Japanese deal threatens to bring about a further loss of trade up to a possible maximum of 16,000,000 dollars. America definitely cannot afford to face this new threat, but on the other hand it is difficult to see what steps she can take to counteract it.

The relations between the western powers and Japan are already sufficiently complicated as a result of Japanese policy in Manchukuo. If, however, the big oil deal is a premeditated measure on Japan's part to make her still further independent of Western Europe and America by making friends, temporarily at least, with the only nation that she really fears, it is no more than in keeping with the attitude she has adopted over the Lytton report.—*City Mid-Week, London.*

Steel Hatches for Japanese Ship

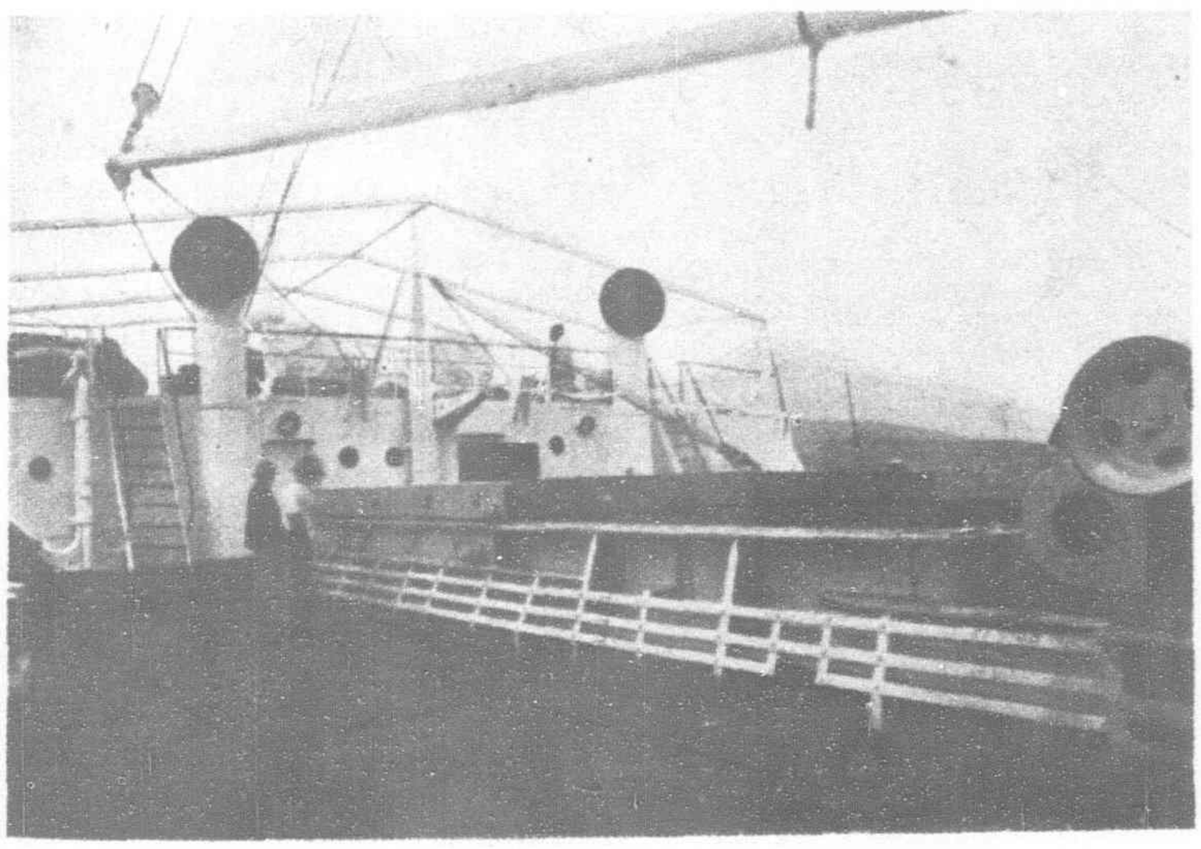
THE steel hatch cover is proving popular with Japanese shipowners, and we learn that all the weather deck hatches of the Ishihara Company's s.s. *Nagoya Maru*—a vessel of 9,000 tons dw., built at Nagasaki by the Mitsubishi Shipbuilding Company—are of the "Macanking" steel type. No. 1 hatch cover (27-ft. by 18-ft.) is of the rolling and pivoting type in two sections. The after section is on stepped coamings and is rolled on top of the forward one, the two sections together being then rolled out about 2-ft. until the pivots of the lower one meet the trunnions, when the whole cover pivots up to the vertical position. Where the modern practice of putting the winches on houses at the foot of the masts is adopted, the cover is made in four sections, with raised coamings at the middle of the hatch, and two sections are rolled and pivoted to the vertical position at each end of the hatch. In such cases the height from the deck when opened is only quarter the length of the hatch, *i.e.*, only half the height as shown in the accompanying illustration of No. 1 hatch in the *Nagoya Maru*.



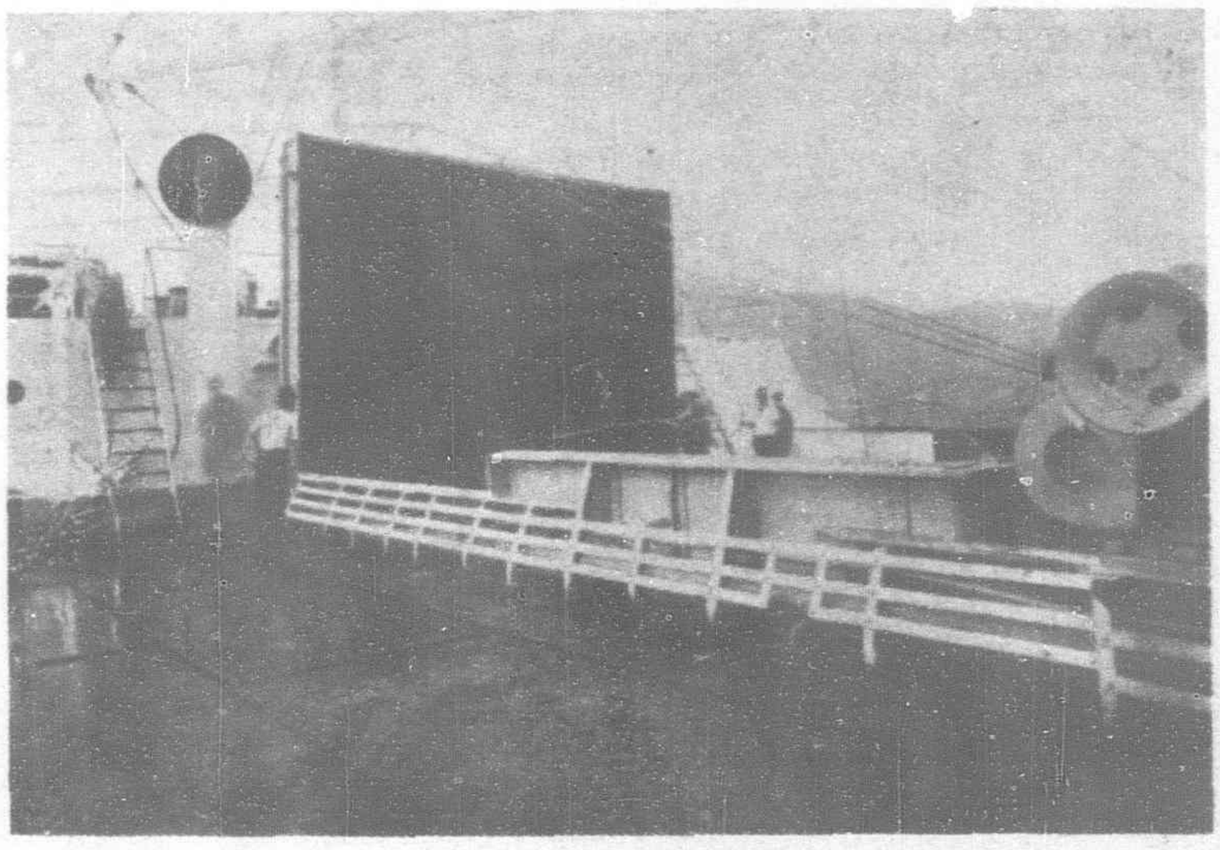
Thwartship Rolling Hatches Nos. 2, 4 and 5 closed

With the winches on deck, as in this vessel, and a flush cover required, the covers are built in three or four sections and pivots are fitted at the end of every section, so that each one pivots up in succession. The vertical height is thus correspondingly reduced, and the stowage space at the end of the hatch is only two feet. Nos. 2, 3, 4 and 5 hatch covers in the *Nagoya Maru* are of the athwartship type, Nos. 2, 4 and 5 being in four sections, each with a strong beam at mid-length of the hatch. These sections are rolled to the sides for use as cargo platforms. No. 3 cover for the bunker hatch is in two sections only.

In commenting on the installation, the builders of the ship state: "The working conditions of the hatch covers were generally satisfactory. The results of the opening and closing tests revealed that for No. 1 hatch the time required for these operations was only two minutes each for opening and closing, with the manual labor of four men with aid of the windlass, while for No. 2 hatch about three minutes each was ample with the manual labor only of the same number of men. The time mentioned will become less when the crew become accustomed to the operations. As to water-tightness, by the hose test hatches Nos. 1 and 3 were most satisfactory, while there was some leakage at the joint between the strong beam and the corner of the hatch cover in Nos. 2, 4 and 5, but this was completely prevented by some minor adjustments."—*Syren*.



No. 1 Rolling and Pivoting Hatch, half open



No. 1 Hatch, fully open

"Macanking" Steel Hatches on the s.s. "Nagoya Maru"

Pulverized Fuel in Japan

Messrs. Clarke, Chapman have received a report of the trials of the eighth vessel fitted for the use of pulverized fuel, the Japanese steamer *Nagoya Maru*, which is the first Japanese pulverized fuel ship. Built by the Mitsubishi Zosen Kaisha, Ltd., she is equipped with three No. 2 Clarke, Chapman Resolutor pluverizers, each capable of dealing with one ton of coal per hour. These fire three single-ended boilers, each having a heating surface of 2,850 sq. ft. and working at a steam pressure of 225 lb. per sq. in. The pulverizers are driven by high-speed steam engines of 30 h.p. each at 1,450 revs. per min., with a steam pressure of 100 lb. per sq. in., and exhausting against a back pressure of 10 lb. per sq. in. The first cables from Japan indicate that the pulverized fuel plant has proved eminently successful during the trials of the ship Another vessel to be equipped with Resolutor pulverizers is the *Johol Maru*, which is being built by the Harima Zosen for the Ishihara Sangyo and is rapidly approaching completion. It is thought that the Johnson patent marine water-tube boiler, which shows great promise by reason of its high rating, small amount of brickwork, quicker response to sudden demands for steam, etc., will probably make a considerable contribution to the solution of the fuel problem. This boiler, for which Messrs. Clarke, Chapman have obtained the manufacturing rights and rights to grant sub-licences, is admirably suited for alternative firing by oil or pulverized fuel.

Engineering Notes

INDUSTRIAL

CHINESE TOOL FACTORY.—The Executive Yuan at Nanking has approved the proposal made by the Ministry of Industries for the sale of the Government's shares in the Liehshan coal mines to private investors at a price $600,000, the money to be used for the construction of a tools factory.

SULPHUR FACTORY.—High officials of the Japanese Ministry of Overseas Affairs and representatives of the South Manchuria Railway have decided to establish a sulphur factory in Dairen with a capital of Y.20,000,000. The factory will produce 100,000 tons of sulphur yearly, according to estimate of officials. It was not decided, however, whether stock will be sold to the public.

RAILWAYS

ELECTRIFICATION IN JAPAN.—As a result of a recent conference the I.G.R. has decided to postpone from September, 1933, to February, 1934, the date for the completion of the electrification of the Osaka-Kobe line. Work will be commenced on the Suita, Ashiya and Kobe sub-stations at the beginning of next September, and it is expected that the substations and overhead system will be completed by the end of 1933. A charter has been granted to the Tokyo-Yokohama Electric Railway for the extension of the Tokyo suburban system for a distance of approximately five miles at an estimated cost of 15,000,000 yen. The Enoshima Electic Railway is to double its track for a distance of 10 km. between Kamakura and Fujisawa. Work will probably be started next month.—*Electrical Review.*

LOCOMOTIVE PLANT IN BURYAT.—Early in August construction work on a huge locomotive plant, to cost 125 million roubles, was begun at Verkhneudinsk in the Buryat-Mongol Republic. The plant is scheduled to be finished in December, 1933. It will consist of 28 departments, including locomotive assembly and car assembly departments, a foundry, and tool, repair, and wood-working shops. Its annual capacity is set at 1,080 locomotives, 12,000 freight cars, and 2,000 passenger cars.

SHIPPING

HUAI RIVER CONSERVANCY.—A contract has been signed between General Liang Kuan-ying, commander of the 25th Route Army, and the Huai River Conservancy Bureau for the conservancy of the river by troops. Altogether five thousand soldiers are to be employed. In order to facilitate communication a light railway has been built along the river.

SHIPPING SUBSIDY.—A subsidy for shipping amounting to Y.10,000,000 (£1,000,000 at par), to be spread over three years, is under consideration by the Japanese Government. Its object would be to enable Japan's lesser mercantile marine, which to a great extent is made up of out-of-date and uneconomical old tramps and hulks, to be renewed. The proposal, if adopted, would result in the granting of a subsidy of £4 per gross ton for 250,000 tons of new shipping on the condition that 500,000 tons of ships over 35 years old were simultaneously scrapped. Thus before a shipping firm could become eligible for the subsidy of £4 per ton of new tonnage it would have to scrap double the amount of old tonnage.

COMMUNICATIONS

TELEPHONES FOR JAPAN.—The installation of new telephones at the rate of 23,000 per year is being planned by the Japanese Ministry of Communications.

CHINA TELEPHONE EXTENSIONS.—The *Chinese Economic Bulletin* states that in order to bring northern and southern Kiangsu into closer contact, the Provincial Reconstruction Department is planning an extension of the present long-distance telephonic system in southern Kiangsu to six important cities in the northern part of the province. According to present plans, the nine cities of Soochow, Wukiang, Changshu, Wusih, Kiangyin, Liyang, Changchow, Ihing and Tanyang in southern Kiangsu, will be linked up with Nantung, Yangchow, Taihsien, Tsingkiangpu and other important cities of northern Kiangsu.

RADIO TELEPHONE FOR JAPAN.—The Tokyo Ministry of Communications has approved the application of Baron Yoshiro Fujimura, and others, for permission to establish a concern to be known as the International Wireless Telephone Co., Ltd. The concern will have a capital of Yen 13,250,000, a quarter paid. Within two years it is to perfect equipment for direct telephone services with Europe, America, Java, Hongkong, Shanghai, Formosa and Dairen. The equipment would be installed by the company but operated by the Government, which would return 95 per cent. of the proceeds to the company for the use of the equipment. Baron Fujimura, who heads the scheme, used to be Minister of Communications.

SULZER BROTHERS

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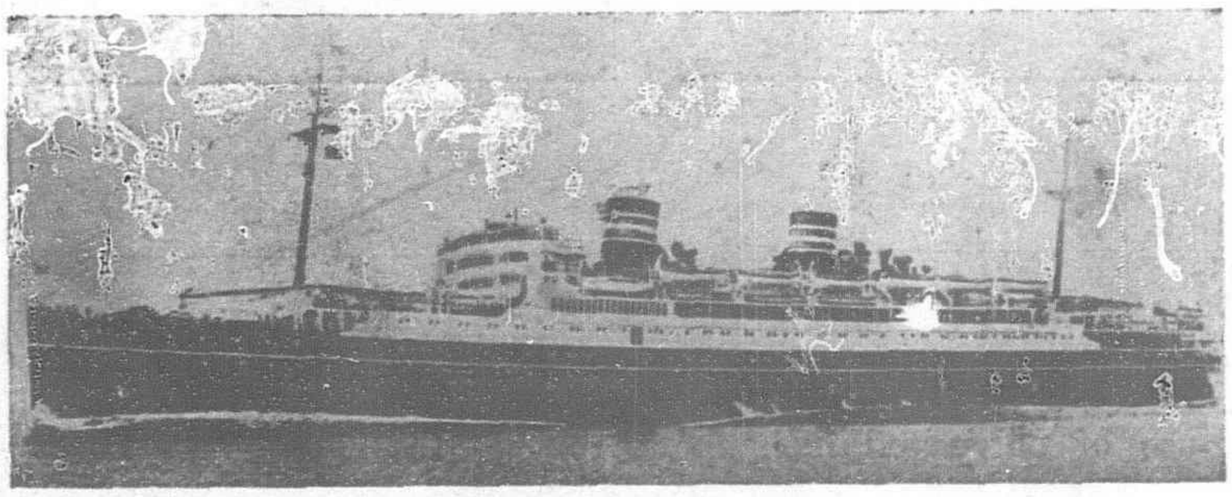
上海愛多亞路四號
蘇爾壽兄弟公司常備樣本供奉各界
垂詢工程事務亦曷誠酬答



N.Y.K. Motor Liner "Asama Maru" Propelled by Four 8-cylinder Sulzer Two-cycle Diesel Engines Totalling 16,000 B.H.P.

Other Products:

Steam Engines and Boilers, Air and Gas Compressors, Centrifugal Pumps and Fans, Borehole Pumps, Stationary and Marine Diesel Engines, Ice-making and Refrigerating Plants, Maag Gears and Maag Planing Machines.

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